# APPENDIX 1

# CONTACT DETAILS AND USEFUL ADDRESS

**Conservation Team**
**Health and Environmental Services**
**Strategic Sustainability Officer**
**Urban Design Team**

South Cambridgeshire District Council
South Cambridgeshire Hall
Cambourne Business Park
Cambourne
Cambridgeshire
CB23 6EA

Tel: 08450 450 500
Website: www.scambs.gov.uk

## URBAN DESIGN

Cambridgeshire County Council, Environment & Transport Directorate,
Castle Court, Shire Hall, Cambridge, CB3 0AP. Tel: 01223 717111

Commission for Architecture and the Built Environment (CABE),
1 Kemble Street, London, WC2B 4AN. Tel 020 7070 6700
www.cabe.org.uk

Royal Institute of British Architects, 66 Portland Place, London W1B 1AD
Tel: 020 7580 5533

Royal Institution of Chartered Surveyors, RICS Contact Centre,
Surveyor Court, Westwood Way, Coventry, CV4 8JE. Tel: 0870 3331600

Royal Town Planning Institute, 41 Botolph Lane, London, EC3R 8DL.
Tel: 020 7636 9107

## CONSERVATION AND LANDSCAPE

Bat Conservation Trust, 15 Cloister House, 8 Battersea Park Road, London, SW8 4BG. Tel: 0207 627 2629
www.bats.org.uk

Cambridgeshire Biodiversity Partnership Co-ordinator, Cambridgeshire County Council, Castle Court, Shire Hall, Castle Hill, Cambridgeshire, CB3 OAP
Tel: 01223 717111
www.cambridgeshire.gov.uk

English Nature, Northminster House, Peterborough, PE1 1UA.
Tel: 01733 455000
www.english-nature.org.uk

Environment Agency, Bromholme Lane, Brampton, Huntingdon, Cambridgeshire, PE28 4NE. Tel: 01480 414581

Landscape Institute, 33 Great Portland Street, London W1W 8QG.
Tel: 020 7299 4500

**ARCHAEOLOGY**

County Archaeology Office, Box No: ELH 1108,
Castle Court, Shire Hall, Cambridge, CB3 0AP. Tel: 01223 717312

**CRIME AND SAFETY**

Cambridgeshire Constabulary (Architectural Liaison Officer),
Whittlesey Police Station, 8 Queen Streeet, Whittlesey, Cambridgeshire,
PE7 1AY. Tel: 01345 606518

**ACCESS**

Disability Rights Commission (DRC) Helpline Tel 08457 622633
www.drc-gb.org.

National Register of Access Consultants
Tel: 020 7234 0434
www.nrac.org.uk

**ENVIRONMENTAL HEALTH**

The British Standards Institution (BSI) www.bsi-global.com;

The Chartered Institution of Building Services Engineers (CIBSE) www.cibse.org;

The International Commission on Illumination (CIE) www.cie.co.at;

The Department for Transport (DFT) www.dft.gov.uk;

The European Committee for Standardisation www.cenorm.be; and;

The Institute of Lighting Engineers (ILE) www.ile.org.uk

# APPENDIX 2

# REFERENCES AND FURTHER READING

## SOUTH CAMBRIDGESHIRE DISTRICT COUNCIL

Core Strategy Development Plan Document (DPD)
Development Control Policies DPD
Cambridge East Area Action Plan (AAP)
Cambridge Southern Fringe AAP
Northstowe AAP
North West Cambridge AAP

Biodiversity Supplementary Planning Document (SPD)
Conservation Areas SPD
Listed Buildings: works to or affecting the setting of SPD
Open Space in New Developments SPD
Public Art SPD
Trees SPD

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# APPENDIX 3

# RELEVANT POLICIES

Biodiversity Guidance

| | **Statutory Protection** | **Classification Examples** | **Key Legislation and Guidance** |
|---|---|---|---|
| Sites | It is a requirement to consult with Natural England before undertaking any operation potentially leading to damage of a protected site. | Special Areas of Conservation (SAC) (Eversden and Wimpole Woods)<br><br>Special Protection Areas (SPA) (Cam Washes)<br><br>Site of Special Scientific Interest (SSSI) (37 sites) | Council Directive (92/42/EEC) on the conservation of natural habitats and of wild fauna and flora (Habitats Directive), 1992.<br><br>Wildlife and Countryside Act, 1981 (as amended)<br>Countryside and Rights of Way Act, 2000.<br><br>Planning Policy Guidance 9: Nature Conservation, 1994. |
| Species | It is a requirement for developers to avoid or mitigate adverse effects upon protected species. | Specially protected species are listed in the Schedules appended to the Wildlife and Countryside Act, in the Habitats Regulations, or in their own legislation. The Schedules are reviewed every five years. | |

| | **Non-statutory Protection** | **Classification Example** | **Key Guidance** |
|---|---|---|---|
| Sites | Wildlife Trust and Local Authority may identify sites according to agreed criteria. Sites are then included upon Proposals Maps within Local Development Frameworks (LDF). | County Wildlife Sites (CWS)<br><br>Local Nature Reserves (LNR)<br><br>Protected Roadside Verges (PRV) | UK Biodiversity Action Plan, 1994.<br><br>Cambridgeshire and Peterborough Biodiversity Action Plans, 2000.<br><br>Local Development Framework (LDF).<br><br>South Cambridgeshire Biodiversity Strategy |
| Species | Species and habitats given priority in a BAP (National or Local) | UK: 1150 priority species and 65 priority habitats.<br><br>Cambridgeshire: 17 species and 27 habitat action plans. | |

# APPENDIX 4

# AIR QUALITY: SUPPLEMENTARY DESIGN GUIDE

## Contents

## 1.0 Introduction

The aim of this document is to provide guidance on the way in which air quality and air pollution issues will be dealt with through the planning system. Air pollution and poor air quality can have detrimental impacts on health and the amenity of users of land in terms of odour, dust and nuisance. The Local Planning Authority considers that the planning system has a key role in protecting people from unacceptable risks to their health and in providing an adequate protection to the amenity value of land. These considerations must however be balanced against other aims of the planning system such as to secure economic regeneration and provide adequate levels of housing. The aim is to achieve sustainable development in the District that achieves the best balance of social, economic and environmental considerations. All of these considerations can have significance for both spatial policy and individual development control decisions.

This SPD will supplement planning policy NE/16 within the Local Development Framework. The purpose and objectives of this SPD are to underpin and endorse the policies within the Local Development Framework to improve air quality within South Cambridgeshire. In addition, it will help to implement the objectives of the Air Quality Action Plan (AQAP), relating to land use.

Specifically, the objectives of this SPD are to:

- To emphasize the role South Cambridgeshire District Council has in improving air quality within the District through planning processes
- To identify developments where Low Emissions Strategies will be required
- To provide advise and guidance on potential mitigation measures that may be employed to reduce the impacts of new developments
- To provide guidance on when air quality assessments may be required and what is required within them (see Appendix 3: Air Quality: A guide for Developers)
- To provide guidance on the use of S.106 agreements to improve air quality

## 2.0 Policy Background

### 2.1 The Environment Act 1995

Part IV of The Environment Act 1995 provides the legal framework for requiring Local Authorities in England and Wales to review the air quality in their area. The Act introduces Local Air Quality Management (LAQM)

### 2.2 The Air Quality Strategy (for England, Scotland, Wales and Northern Ireland)

The main elements of the Air Quality Strategy (AQS) can be summarised as follows:

- National Air Quality Standards and Objectives that must be achieved by each Authority,

- The use of policies by which objectives can be achieved and which include the input of important factors such as industry, transportation bodies and local authorities,
- The predetermination of timescales with target dates for the achievement of objectives.

The Strategy requires the following actions to be taken by each Authority:

- To carry out an air quality review and assessment (AQRA) in accordance with Section 82 of the Environment Act 1995

- Depending upon the results of the AQRA, to make an order designating an Air Quality management Area (AQMA)

- Prepare an air quality action plan (AQAP)

- Modify and update the AQAP

- Continually review and assess the air quality within the District by way of Updating and Screening Assessments (USA) and Progress Reports

- Implement any actions in an action plan

- Revoke or modify an AQMA or Order

At the centre of the AQS is the use of national air quality standards to enable air quality to be measured and assessed. These provide the means by which objectives and timescales for the achievement of objectives can be set.

Most of the proposed standards have been based on the available information concerning the health effects resulting from different ambient concentrations of selected pollutants and are the consensus view of medical experts on the Expert Panel on Air Quality Standards (EPAQS). The standards and associated specific objectives to be achieved between 2004 and 2010 are attached as Appendix 1. This shows the standards in $\mu g/m^3$ with the number of exceedences that are permitted.

Limit values have been adopted for various pollutants based upon their potential effects on health. Where limit values are not being met for any of the pollutants, the Act gives provision for the Local Authority to declare an Air Quality Management Area (AQMA) for that pollutant.

On declaration of an AQMA, the Local Authority is required to draw up an Air Quality Action Plan, within which are details of potential feasible actions that will help to reduce concentrations of the pollutant within the AQMA. Realistic time scales should be provided for implementation of the identified solutions and an indication as to how progress will be monitored.

In February 2009, South Cambridgeshire District Council adopted its' own Local Air Quality Strategy. The air quality strategy aims to bring together all issues that have an impact on air quality and is the document that has committed South Cambridgeshire District Council to creating this SPD.

The strategy lays out a framework upon which all those affected by poor air quality can build a positive relationship with a common goal of improving air quality without causing significant detriment to any other stakeholder.

## 2.3 Air Quality Action Plan for Cambridgeshire

South Cambridgeshire District Council declared an Air Quality Management Area (AQMA) for $NO_2$ in July 2007 based upon monitored and modelled exceedences of the national air quality objective for annual mean $NO_2$. This is along a stretch of the A14 between Bar Hill and Milton. Following this, a detailed assessment of $PM_{10}$ along the A14 corridor was completed in December 2007. The detailed assessment identified exceedences of the 24-hour mean objective for $PM_{10}$ and concluded that an AQMA will be required for $PM_{10}$ along the A14 between Bar Hill and Milton. After discussions with DEFRA, it was concluded that the simplest method of doing this will be to modify the existing AQMA for $NO_2$ to include $PM_{10}$.

The cause of the exceedences of the annual mean $NO_2$ objective and the 24-hour mean $PM_{10}$ objective is undoubtedly emissions from traffic along the A14. As a result of the AQMA, the Council has been working closely with Cambridge City Council and Huntingdonshire District Council to produce an Air Quality Action Plan (AQAP). The AQAP brings together a wide range of initiatives and mitigation measures which, when implemented, will help to reduce pollution within the District.

South Cambridgeshire has an area of concern along a stretch of the A14 between Bar Hill and Milton where exceedences of the annual mean objective for nitrogen dioxide and the 24-hour mean objective for $PM_{10}$ appear likely to be a mid-term problem although with the forecast growth in the region, the potential for the exceedences to become long term problems cannot be ignored.

Further Assessment demonstrates that the traffic component for $NO_2$ at the Bar Hill monitor is 28.1µg/m$^3$. HDV contributions were the highest of the traffic component, reaching 66.2% of the annual measured total.

The traffic component farther East for $NO_2$ has been calculated as 28.5µg/m$^3$. HDV contributions were the highest of the traffic component, reaching 55.5% of the annual measured total.

Further assessment of $PM_{10}$ has demonstrated that the traffic component at the Bar Hill monitor is 5.1µg/m$^3$. HDV contributions were the highest of the traffic component, reaching 12% of the annual measured total.

At the Impington continuous monitor, the traffic contribution to the annual mean $PM_{10}$ has been calculated as 6.7µg/$m^3$ with HDVs contributing the highest of the traffic component at 14.4% of the total annual mean.
South Cambridgeshire District Council are working with Huntingdonshire District Council and Cambridge City Council to prepare an Air Quality Action Plan. The Districts have completed a table of actions that will have a positive impact upon air quality. These are currently in place or planned for the near future by the County and all District Councils. Some actions are specifically designed to improve air quality, but many of the actions have been initiated to tackle other areas, for example climate change or reducing congestion. They have been arranged into the following themes:

- Managing the network
- Lowering emissions
- Strategic Planning
- Development Control
- Smarter Travel Choices
- Raising Awareness

Each District has produced a list of the 5 single actions, or packages of measures that will in their opinion have the most beneficial impact on air quality in their area. The 5 priority actions for South Cambridgeshire are:

- Completion and opening of the Cambridgeshire Guided Busway.

- Widening of the A14 carriageway between Fen Drayton and Histon – increasing the number of lanes from 2 to 3 on both Eastbound and Westbound carriageways should help to alleviate congestion and speed traffic through-flow.

- Re-alignment of the A14 and the construction of a local road, between the M11 and Bar Hill junctions as part of the A14 Improvement Scheme.

- Establish a Freight Quality Partnership – the South Cambridgeshire District Council's Further Assessment of air quality along the A14 has identified HGVs as having the greatest impact on air quality in the District. If improvements in air quality are to be achieved on the A14 between Bar Hill and Milton, it is vital that the Council seeks to give an understanding of local air quality issues to freight operators who may in turn be able to offer invaluable input into reducing emissions from their fleet.

- Embedding the LDF Air Quality Policy in Local Development Documents – this will ensure that air quality is considered at the planning stage and therefore not adversely impacted by new development.

It is envisaged that these 5 actions together can bring about the required reduction in $NO_2$ and $PM_{10}$ in order to meet the National Objectives. However, it is also the intention of the Council to implement various other air quality mitigation measures to

bring about a general improvement in air quality across the District. Some of these mitigation measures (especially those aimed at reducing emissions from road transport) will form a Low Emissions Strategy and such mitigation measures are discussed in Section 8 of this SPD.

### 2.4 Air Quality Modelling in South Cambridgeshire

In June 2009, Cambridge Environmental Research Consultants (CERC) completed a modeling study and report focusing on the effects on air quality of the major growth proposed in the Cambridge sub-region. The pollutants modeled were $NO_2$, $PM_{10}$ and $PM_{2.5}$ for various growth scenarios in 2016 compared to baseline scenarios in 2006.

Various modeling studies were carried out to include:

- No development
- With the proposed Northstowe development
- With the proposed Hauxton development
- With the proposed NIAB site development
- With the proposed Cambridge Southern Fringe development

The modeling results show that the largest impact potentially leading to exceedences of annual mean $NO_2$ and $PM_{10}$ objectives in areas adjacent to the A14 is that of the Northstowe development. With this in mind, it is essential that sustainable transport measures are put into place at development proposal stage in order to minimize the impact of the traffic and housing growth.

## 3.0 National Policy Guidance

The following national planning guidance must be used in order to achieve success when implementing this SPD:

### 3.1 Planning Policy Statement 1 (PPS1): Delivering Sustainable Development.

Planning and Climate Change sets out how spatial planning should contribute to reducing carbon emissions and stabilizing climate change (mitigation) and take into account the unavoidable consequences (adaptation). The PPS accompanies the Climate Change Bill published in March 2006 which will make the government's long-term goal of a 60% reduction in carbon dioxide emissions by 2050 a legally binding target.

### 3.2 Planning Policy Statement 6 (PPS6): Planning for Town Centres.

PPS6 sets out the Government’s guidance on retail planning policy and planning for town centres.

Its key objective is for town centres to promote their vitality and viability by planning for growth and development of existing centres; and promoting and enhancing

existing centres by focusing development in such centres and encouraging a wide range of services in a good environment, accessible by all.

### 3.3 Planning Policy Statement 13 (PPS13): Transport.

PPS13 guides the integration of transportation and land use through development process. It is a material consideration in dealing with individual planning applications and appeals. Its main objective is;

"to have a modern, sustainable, safe transportation system which benefits society, the economy and the environment and which actively contributes to social inclusion and everyone's quality of life".

### 3.4 Planning Policy Statement 23 (PPS23): Planning and Pollution Control

PPS23 applies to England only and advises that the planning system should have a key role when dealing with any development that could either give rise to pollution or be significantly affected by pollution.

Focussing on sustainable development, PPS23 contains advise on pollution control through development control, utilising the various pieces of legislation and guidance available on pollution control.

PPS23 also describes how planning obligations can be used in the provision of financial or monitoring assistance from the developer that will enable South Cambridgeshire District Council to pursue the requirements of its' Air Quality Action Plan.

PPS23 also includes the following important sections:

- Appendix A: Matters for consideration in preparing local development documents and taking decisions on individual planning applications
- Annex 1: Pollution control, air and water quality

The government's policy on Climate Change as detailed in the Planning White Paper (May 2007) has now been set out in the supplement to PPS1 (above).

On the 18th June 2009 the Chief Planner at Communities and Local Government wrote to all Chief Planning Officers to advise that the new UK Climate Projections 2009 (UKCP09) was published the same day. The letter is advising on the implications for the planning process. The Defra web site and associated links advise on how to access the projections. Although the projections are unlikely to affect the progress on local and regional plan making or decisions on planning applications, local authorities should consider the full possibilities offered by UKCP09.

Other policy guidance includes Circular 05/05 on Planning Obligations in which are the five tests that planning obligations must meet are set out and the Community Infrastructure Levy (CIL) which when it comes into being in late 2009 will allow local authorities to levy a charge on development.

## 4.0 Local Policy

The Local Development Framework (LDF) was adopted in July 2007 and replaces the previous Local Plan, published in 2004. It contains a series of Development Plan Documents (DPD's), which set out visions of the future of South Cambridgeshire and the objectives and targets that must be met in order to achieve that vision.

Local Development Framework Policy NE/16 is directly linked to air quality. The policy reads:

"1. Development proposals will need to have regard to any emissions arising from the proposed use and seek to minimise those emissions to control any risks arising and prevent any detriment to the local amenity by locating such development appropriately.

2. Where significant increases in emissions covered by nationally prescribed air quality objectives are proposed, the applicant will need to assess the impact on local air quality by undertaking an appropriate modelling exercise to show that the national objectives will still be achieved. Development will not be permitted where it would adversely affect air quality in an Air Quality Management Area."

This policy aims to protect human health and the environment from possible negative effects on air quality caused as a direct result of development and satisfied the requirements of the Regional Spatial Strategy.

In addition to the direct link with air quality emissions, the LDF also contains policies relating to energy efficiency, renewable energy and transport.

Each DPD contains a site specific Area Action Plan for the developments and includes policies that will have a direct impact upon air quality issues, such as sustainable development and cycling and car parking provisions.
In addition to Development Plan Documents, the LDF also allows for the adoption of Supplementary Planning Documents (SPD's), which are discussed in more detail in the next section.

## 5.0 S.106 Obligations

Section 106 of the Town and Country Planning Act 1990 allows a Local Planning Authority to enter into a legally-binding agreement or planning obligation with a land developer over a related issue. The obligation is commonly referred to as a 'Section 106 Agreement'.

Such agreements can cover almost any relevant issue and can include sums of money. Possible examples of S106 agreements relating to air quality may include:

- Provision of funding to the Local Planning Authority to allow for the setting up of an air quality monitoring network or station to measure impacts of the development
- Provision of funding to the Local Planning Authority for the implementation of air quality mitigation measures
- Financial contributions towards transport infrastructure improvements
- Financial contributions towards implementation of the Air Quality Action Plan
- The developer purchases air quality monitoring equipment for monitoring the impacts of the development into future years.
- The developer organises and sets up a community website that allows for air quality impacts to be obtained by the local community

S106 Agreements can act as a main instrument for placing restrictions on the developers, often requiring them to minimise the impact on the local community and to carry out tasks that will provide community benefits.

DoE Circular 1/97 'Planning Obligations' recognises the important role that planning obligations can perform as part of the planning process. The Circular notes that:

"where a proposed development would, if implemented, create a need for particular facilities or would have a damaging impact on the environment or local amenity or would adversely affect national or local policies, and these matters cannot be satisfactorily resolved through the use of planning conditions, it will usually be reasonable for planning obligations to be sought or offered to overcome these difficulties."

## 6.0 Air Quality Assessments

Pre-application discussions are a legitimate and effective way of obtaining informal views on the merits of a development project. It allows the developer to obtain professional advise at an early stage. It is at this stage that requirements for an air quality assessment and the extent and detail of that assessment can be discussed and agreed.

Air quality assessments should be carried out in line with the staged approach detailed in DEFRA statutory guidance LAQM. TG(09). The assessment submitted to the local authority may involve a simple screening exercise or a more detailed modelled study depending upon the size, nature and location of the development. Some developments require an Environmental Statement (ES). If an ES is required, the same level of detail as above should be incorporated within it.

South Cambridgeshire District Council has produced a guidance document titled "Air Quality – A Guide for Developers", which details all that is expected and required

from air quality assessments. This guidance document is provided as Appendix 3 of this SPD.

## 7.0 Background to Low Emission Strategies

Low emission strategies provide a package of measures to help mitigate the transport impacts of development. They complement other design and mitigation options, such as travel planning and the provision of public transport infrastructure. Strategies are often secured through a combination of planning conditions and planning obligations. They may incorporate policy measures and/or require financial investments in and contributions to the delivery of low emission transport projects and plans, including strategic monitoring and assessment activities.

Good practice guidance on the use of Low Emission Strategies (LES) has been drawn up by the Low Emissions Strategy Group. This group was formed by the Air Quality Beacon Authorities (Croydon, Greenwich, Sefton and Sheffield Councils) plus the Greater London Authority. Kensington and Chelsea Council, City of London Corporation, Cenex and ARUP.

Some authorities are already making effective use of low emission strategies. The guidance is intended to support wider adoption of the approach, and to encourage the use of both well established and more innovative measures. It is intended for use by local authority planners and those who work closely with them such as environmental health, transport planning and sustainable development teams.

The main benefit of low emission strategies is to reduce transport emissions by accelerating the uptake of low emission fuels and technologies in and around a new development. It also aims to promote a shift in mode of travel away from cars. The approach may also: contribute towards achieving local government performance targets; provide local economic benefits; help to streamline planning decisions; and contribute to wider sustainable development goals.

## 8.0 Mitigating Air Quality Impacts

### 8.1 Traffic Reduction and The Low Emission Strategy

High trip-generating developments should be well served by public transport and walking and cycling routes.

Provision of electric vehicle charging points to promote alternative / low emission vehicle use.

### Green travel plans

South Cambridgeshire District Council will encourage the use of Green Travel Plans, submitted with Planning Applications.

PPG 13 'Transport' strongly advocates that use of and preparation of Green Travel Plans. Paragraph 18 of PPG 13 states '…travel plans should be submitted alongside planning applications which are likely to have significant transport implications…'. A Green Travel Plan should comprise a package of practical measures tailored to the circumstances of individual firms and offices. They should aim to reduce:

• Car use for travel to & from work, and business travel

• The environmental impact of travel; and

• The need to travel at all for work.

Given that business travel and commuting accounts for approximately 30% of all car miles travelled, and that 70% of all journeys to work are made by car (with 80% of these single occupancy), it is clear that targeting these groups to reduce their travel by car could have a significant impact on improving traffic congestion and in turn improving air quality.

Travel for work plans

New business and enterprise introduced through new developments within the District will be encouraged to join the Cambridge Travel for Work Partnership, of which, South Cambridgeshire District Council is a member. Details of this scheme can be found at: http://www.tfw.org.uk/about.php

Walking and cycling

In accordance with LDF Policy TR/4, the Council will seek to ensure that developments are located in areas whereby trips to work, home, colleges and schools are short distance and that adequate and safe and convenient walking and cycling routes are made available.

Developers should ensure that there is safe, easy and convenient access to centres and leisure and recreational facilities and services. The Council will seek to encourage the use of walking and cycling routes through publication and information services.

Adequate and secure cycle parking should be provided at developments on every scale and every effort shall be made to encourage non-motorised modes of transport.

Improvement of public transport

Where large developments are located in areas not well served by public transport or cycle/walkways, the Council will seek financial contributions towards implementation of the Air Quality Action and transport infrastructure improvements, in accordance with Circular 05/2005.

Traffic impact assessments / Transport Assessment

In line with LDF Policy TR/3, the Council should ensure that for larger developments, a transport assessment is carried out. The transport assessment should project traffic movements. However, all other planning applications should contain a "Transport Statement" to show that transport mitigation has been considered and that transport impact will be adequately dealt with.

Car parking restrictions

As with LDF Policy TR/2, where developments have good access to public transport or walking and cycling routes, the Council should seek to reduyce the amount of available car parking spaces for that development and adequate cycle parking should be made available.

Car parks at commercial premises should have allocated spaces for low emission vehicles and car sharing/car club vehicles.

Rail Freight

One of the main contributing factors to the poor air quality within the AQMA is the movement of freight vehicles along the A14. In accordance with Policy TR/5, the Council will continue to maintain freight interchange facilities and will seek to increase the percentage of freight using the rail links.

Car Clubs

Car clubs are set up for those who only wish to use cars from time-to-time and encourages the use of alternative modes of transport when a car is not needed. Car club cars have designated parking spaces.

There are various car club schemes, the following of which is an example:

- Register with a car club to receive a smartcard and PIN
- Book your car
- Swipe your smartcard to gain access to your car and enter your PIN
- Return the car to its dedicated parking bay when you're finished

The Council will encourage the use of car clubs within new developments and seek to provide secure parking facilities for car club users.

8.2 Low Polluting Fuels

Encouragement of replacement of high polluting vehicles with alternative, cleaner technologies, such as hybrid fuel cell, electric and hydrogen gas.

Refuelling structure is currently not in place but an important part of the Low Emission Strategy is to seek to install a system of charging points for large developments. Charging points for electric vehicles should be sought at developments on every scale and not just for the larger developments.

Where electric vehicle charging points are proposed for a development, the developer should be encouraged to provide the energy required from renewable energy such as photovoltaic cells or wind power if it is appropriate to do so and will not cause a detriment to the local amenity.

Existing refueling stations within the District should be encouraged to provide alternative fuel technologies.

Developers should be encouraged to investigate the possibility of hydrogen fuel cell technologies.

### 8.3 Building emissions

In addition to reduction of emissions from road transport, improvements in air quality can be achieved within the buildings sector in the following ways:

#### 8.3.1 Energy Efficiency

Design and choice of materials should be to maximize the energy efficiency of the buildings. In addition, plant chosen should be low emission

Standard Assessment Procedure (SAP) rating of new build gives a measure of overall efficiency of domestic building. The higher the SAP, rating, the more efficient the building. Developers should show that have have obtained the highest possible SAP rating for their development.

In addition, consideration should be given to Part L of the Building Regulations. Thuis gives advise on conservation of fuel and power. The developer should ensure a reduction of pollutants from heating plant (e.g NOx from gas combustion).

The Air Quality Action Plan contains details of possible mitigation measures for building emissions which will need to be considered for all new developments.

#### 8.3.2 Renewable Energy

Policy NE/3 (Renewable Energy Technologies in New Development) of the Development Control Policies DPD requires the provision of technology for energy to provide at least 10% of predicted energy requirements in all developments greater than 1000m2 or 10 dwellings. Developers should select the most feasible and cleanest energy provision technology. It should be noted that there is a separate section on energy from biomass within this SPD (section 8.5, below).

### 8.3.3 Energy Supply

Combined cooling heat and power (CCHP), combined heat and power (CHP), solar heating and district heating should all be considered and assessed as a potential energy supply within new developments. The efficiency of these forms of energy supply is greater than installation of gas central heating or condensing boilers in individual premises. This is also in line with the LDF Policy NE/3.

## 8.4 Climate Change

It is important to recognise that any given development may give rise to some negative air quality impacts on a local scale, whilst being neutral or positive at the wider scale. In particular, actions that may be helpful for climate change may be unhelpful for air quality and vice versa. South Cambridgeshire District Council will look favourably at win-win measures, those that will lead to a reduction in both emissions of air quality pollutants as defined within the national air quality strategy and those pollutants that contribute to climate change (global warming).

The topic of air quality and climate change win-win/win-lose/lose-win/lose-lose scenarios is discussed further in the Air Quality Expert Group report on air quality and climate change (AQEG, 2007).

Mitigation measures within a development may not only impact on local air quality but may also aid in the reduction of $CO_2$ emissions. For example, providing energy to a new town from a local CHP plant will prevent the need to install less efficient heating system s within individual homes.

## 8.5 Biomass

Generating heat and power from biomass combustion is an attractive idea as it can allow for carbon savings. However, the combustion of biomass results in increased emissions of pollutants, especially particulate matter and PAH (polycyclic aromatic hydrocarbons, some of which are carcinogenic).

Research in Scotland recently showed that particulate emissions from boilers up to 1MW are around 2 ½ orders of magnitude greater from biomass compared with gas (Scottish Executive, 2006). According to the Biomass Strategy (Defra, 2007) any move away from centrally generated electricity to smaller, locally based plant will inevitably increase emissions in urban areas. In particular, substitution of natural gas with biomass generally leads to increases in emissions of all major pollutants.

London Councils, on behalf of Greater London local authorities, recently commissioned AEA Energy & Environment to undertake a technical review of the potential impacts on air quality of increased wood-fuelled biomass use in London, based on targets to reduce carbon dioxide emissions (AEAT, 2007). Their study showed that the change in emissions resulting from increased biomass combustion in London would be between 2% and 8 % of the 2010 oxides of nitrogen emissions,

whereas the change in emissions would be between 25% and 108% of the 2010 $PM_{10}$ emissions.

The draft report from COMEAP (2007), "Long Term Exposure to Air Pollution: Effect on Mortality", suggests that air pollution has a greater effect on mortality in the UK than previously thought, with a 10µg/$m^3$ increase in fine particles being associated with a 6% increase in risk of death from all-causes. Because there is clear and unequivocal health advice that there is no recognized safe level for exposure to fine particles ($PM_{2.5}$) the current Air Quality Strategy (DEFRA, 2007) requires a 15% reduction in $PM_{2.5}$ in urban areas by 2020.

South Cambridgeshire District Council has a statutory duty to work towards this target, to prevent the deterioration of air quality and to improve air quality. For this reason, the Health Protection team considers that the installation of new biomass boilers is unlikely to be suitable in or adjacent to the Cambridge AQMA, i.e., areas adjacent to or adjoining the A14 between Bar Hill and Milton. Combustion of biomass will always lead to increased emissions locally, in comparison with natural gas. Whilst the additional load from any one biomass boiler might not appear to be very significant, it is contrary to the Exposure Reduction approach for particulate matter outlined in the Defra guidance and it is contrary to our Local Development Framework Policy NE/16.

However, the potential impact might be acceptable if biomass combustion were limited to larger district heating or CHP schemes where it would be cost effective to install effective abatement equipment to reduce the emissions of particulate matter and oxides of nitrogen. Such installations should be located away from the Air Quality Management Area and sensitive receptors where the positive impact of the carbon reduction outweighs the negative impact on air quality.

The choice of appliance (design quality being more important than size), fuel, abatement used, chimney height and locations are crucial. Full details of any proposed equipment and its emissions performance should be supplied to the Health Protection team for consideration before submission of a planning application. Each application will be considered on a case-by-case basis.

## 8.6 Cumulative Impacts

It may be the case that the proposed development is within an area of low pollution but due to high growth in the area involving a series of developments, it may be that a significant worsening of air quality occurs.

Where there are many units or parcels of land to be developed by one single developer, that developer must mitigate against worsening air quality at the design stage of the development.

Where unrelated developments exist, it is vital to reduce "background creep". Cumulative air quality assessments will be required in localities where a series of

unrelated developments are proposed whereby the cumulative impact of those developments may impact on local air quality. This may result in financial contributions from each of the developers to implement low emissions strategys within their development.

Where the development exceeds 10 units or 1000m$^2$, the Council will require the submission of an Emission Assessment for the development. The emissions assessment should show a reduction in emissions from all aspects of the development, including transport, buildings and energy provision using a range of low emissions techniques and measures with the greatest decrease in emissions coming from the developments that have the highest emissions although it is expected that developments and development projects of all sizes will contribute to emissions reductions.

The Council will seek to obtain funds from the largest developments that will put towards the Air Quality Action Plan programme.

## 8.7 Indoor Air Quality

In order to minimize human exposure to pollutants, the design of buildings should be such that any opening windows and/or mechanical ventilation systems should be located on the faceade of the buildings that are away from the source of the pollution.

Where buildings are greater than 2 storeys in height, with residential to ground level;, stricter mitigation measures will be required for the residences closer to the ground. Under these circumstances, it is more appropriate to have opening windows and balconies at floors higher up the building.

Public spaces and gardens can be considered as relevant receptor locations and as such, should be screened to determine impacts of air quality within them. Where possible, well considered positioning and orientation of these areas can help to minimize public exposure. In any circumstances, public spaces or gardens should be located as far from the source of air pollution.

The Council will encourage green (living) roofs and walls as they are known to help reduce air pollution, they also provide a natural cooling system and add additional insulation.

## 8.8 Construction/ Demolition

Concentrations of fine particles ($PM_{10}$) are also known to breach national health based objectives and in areas along the A14 between Bar Hill and Milton. The 24-hour mean objective (no more than 35 exceedences of 40µg/m$^3$ daily per annum) is regularly exceeded significantly. Because of the negative impact of particulate matter on human health – at any concentration in ambient air – exposure reduction has been proposed as the most effective means of improving the health of most people and is now in place as government policy.

Temporary emissions of dust during the construction phase are of concern as they add to the overall exposure to particulate matter of residents, visitors and site-workers. South Cambridgeshire District Council, in association with the is a member of the Considerate Contractors Scheme (CCS) designed to ensure that construction and routine maintenance activities in the District progress without making life unpleasant for people who live and work nearby.

The CCS states that dust and smoke should be kept to a minimum and mud spills should be immediately cleaned up. In addition, schemes to minimise the production of airborne dust during the construction period will be required by planning condition. The Council has a methodology which sets out the approach to minimising the impact of the planned phase of redevelopment and growth in South Cambridgeshire based on prevention, suppression and containment; South Cambridgeshire District Council considers this approach to dust issues to be best practice and recommend that developers refer to it.

The Council expects to see an Emissions Control plan for every development submitted with the planning application. The plan and the mitigation measures employed should be proportional to the potential impact. Details of and further advice on how to assess the potential impact are provided in the following: documents:

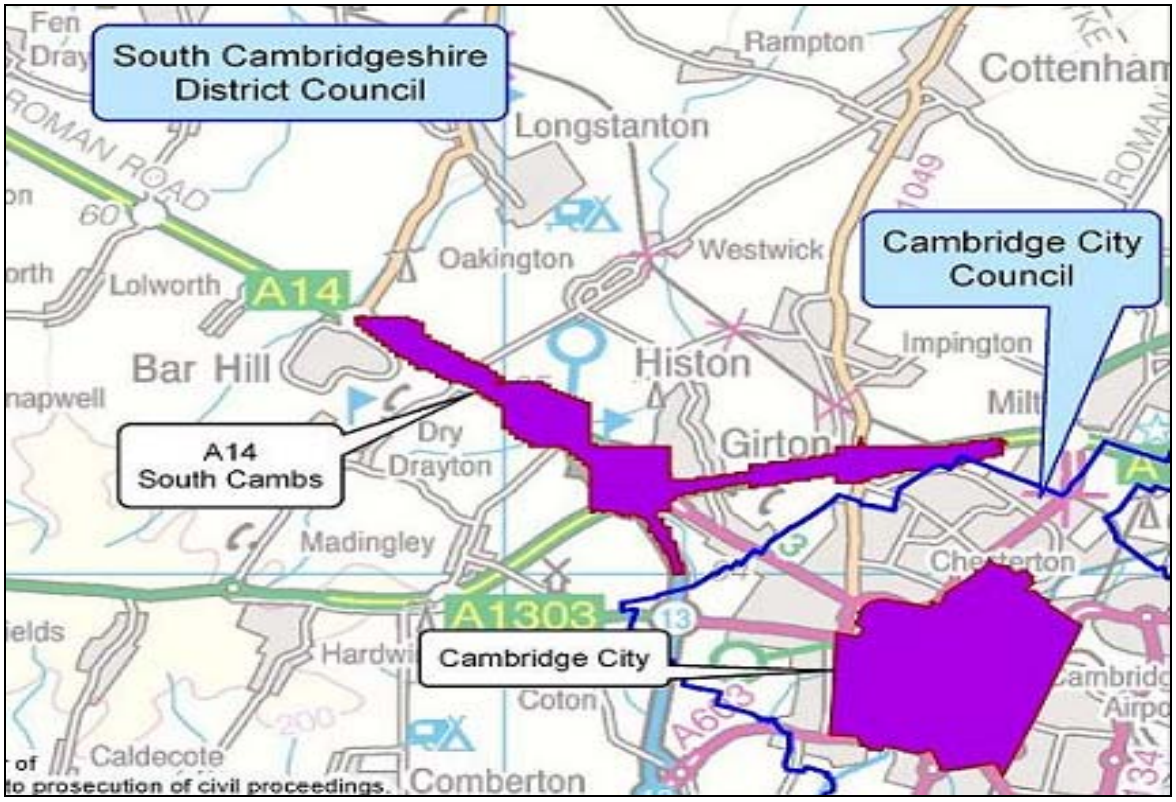
- BRE document 'Control of Dust from Construction and Demolition Activities' February 2003, ISBN 1 86081 6126.
- London Best Practice Guidance: The control of dust and emissions from construction and demolition (November 2006): can be downloaded from http://www.london.gov.uk/mayor/environment/air_quality/docs/construction-dust-bpg.pdf

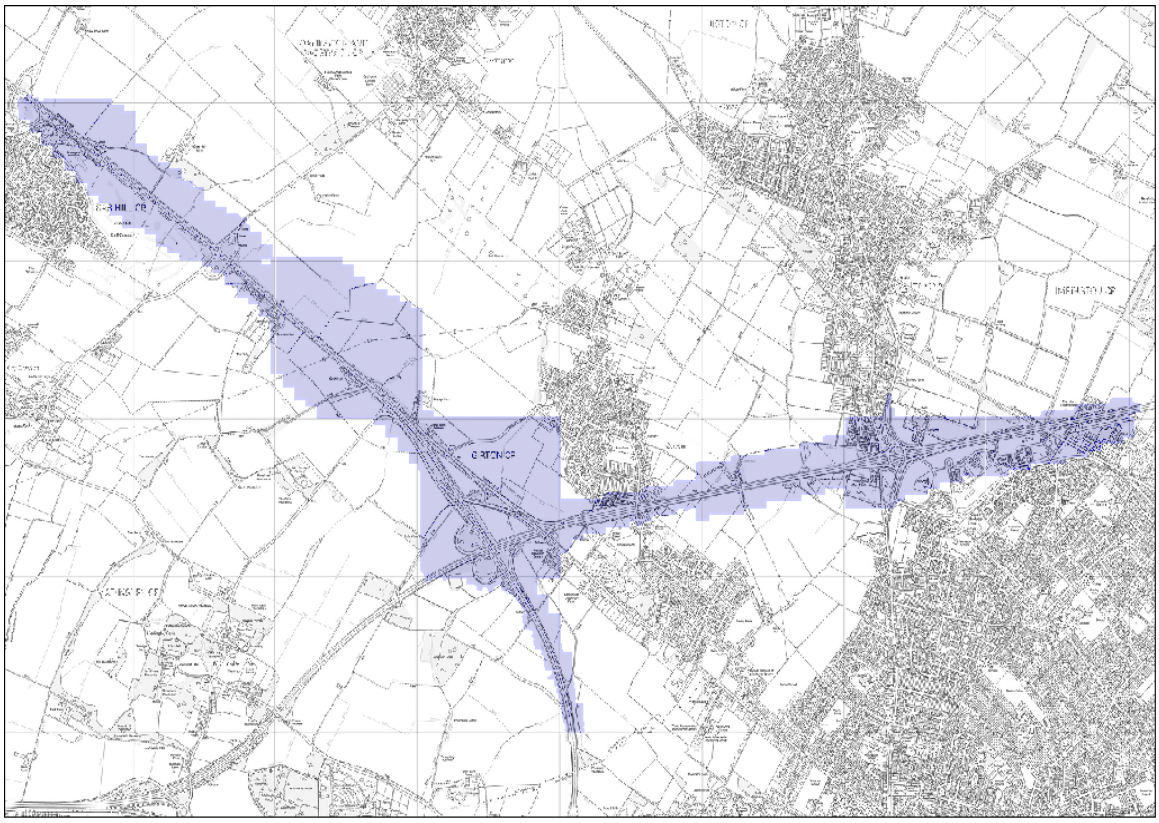
Appendix 1 – National Air Quality Standards and Objectives

**Air Quality Objectives included in Regulations for the purpose of Local Air Quality Management in England.**

| Pollutant | Air Quality Objective | | Date to be achieved by |
|---|---|---|---|
| | Concentration | Measured as | |
| **Benzene** | 16.25 $\mu g/m^3$ | Running annual mean | 31.12.2003 |
| | 5.00 $\mu g/m^3$ | Running annual mean | 31.12.2010 |
| **1,3-Butadiene** | 2.25 $\mu g/m^3$ | Running annual mean | 31.12.2003 |
| **Carbon monoxide** | 10.0 $mg/m^3$ | Running 8-hour mean | 31.12.2003 |
| **Lead** | 0.5 $\mu g/m^3$ | Annual mean | 31.12.2004 |
| | 0.25 $\mu g/m^3$ | Annual mean | 31.12.2008 |
| **Nitrogen dioxide** | 200 $\mu g/m^3$ not to be exceeded more than 18 times a year | 1-hour mean | 31.12.2005 |
| | 40 $\mu g/m^3$ | Annual mean | 31.12.2005 |
| **Particles ($PM_{10}$) (gravimetric)** | 50 $\mu g/m^3$, not to be exceeded more than 35 times a year | 24-hour mean | 31.12.2004 |
| | 40 $\mu g/m^3$ | Annual mean | 31.12.2004 |
| **Sulphur dioxide** | 350 $\mu g/m^3$, not to be exceeded more than 24 times a year | 1-hour mean | 31.12.2004 |
| | 125 $\mu g/m^3$, not to be exceeded more than 3 times a year | 24-hour mean | 31.12.2004 |
| | 266 $\mu g/m^3$, not to be exceeded more than 35 times a year | 15-minute mean | 31.12.2005 |

Appendix 2 – South Cambridgeshire District Council Air Quality Management Area



Appendix 3 – Air Quality: A Guide for Developers

**Pending: please contact Health & Environmental Services**

# APPENDIX 5

# DEVELOPMENT OF POTENTIALLY CONTAMINATED SITES

## Full Guidance Notes for Developers

### 1. Introduction

The purpose of this guide is to assist developers and their advisors to understand and be aware of what information South Cambridgeshire District Council (SCDC) will need to assess an application for planning consent on land which is or may be affected by the presence of contamination. Following this guidance will enable the swift processing of planning applications for potentially contaminated sites.

The guidance aims to indicate the type and extent of the investigation and details required by SCDC to satisfy its statutory responsibilities at the initial planning application stage, for building regulation approval and to deal with environmental health issues that may arise. The Council aims to ensure that good practice is adopted in dealing with land with contamination issues. The presence, or otherwise, of contamination should be identified when planning applications are made, if present it should be characterised, assessed, and addressed under planning permission to prevent harm or pollution, and handled and treated effectively.

Safe, informed decisions are to be made on the basis of full and competent assessments. Developers and their agents will incur the costs of satisfying these requirements and should be assured that the Council has no desire to impose an unreasonable burden. However, the Council does require that contamination issues are dealt with in an appropriate manner and will intervene if there is any failure to comply with planning requirements. Applications will be refused if development is likely to be unsuitable because it may pose threats to health, the community or the environment. Early consultation with the Environmental Health Department is strongly recommended. Every site is different and we are happy to offer advice on a site-specific basis.

Appropriate assessment of potential contamination together with provision for agreed remediation and validation by the Council is now an integral part of the development control process. This will allow contamination risks to be minimised through carefully planned and implemented development. In addition, the Authority will also consult and have regard to comments made by other statutory bodies in respect of contaminated land, principally the Environment Agency.

"Land contamination" is a general term that is taken to refer to 'substances' in on or under the land with potential to cause harm or water pollution. This contrasts with the term "Contaminated Land" which has a precise legal meaning conferred by the Environmental Protection Act 1990 and is only used in specific circumstances where a formal determination has been made.

## 2. The Planning Procedure

The actual or possible presence of contamination is a material planning consideration. Persons submitting planning applications are expected to declare any knowledge they may have about potential land contamination. In many cases it will be an advantage to determine whether there are likely to be any contamination issues on site before submitting an application for planning consent. This may involve a basic historical land use search and a site walk over. On large-scale developments it could form apart of a pre-application enquiry where any necessary investigations can be determined prior to submitting a planning application.

On any site where there is the potential for contamination to exist, the Development Services and the Environmental Health Department will work together to ensure that the proposed sites are appropriately investigated, managed and, if applicable, remediated. We are mainly concerned with risks to human health and ensuring that the proposed development will be suitable for use. For example land which has a history of use and is the subject of a new development proposal for industrial units may not need the same level of investigation and remediation as a similar site where the proposed end use is houses with gardens. We also consider other matters that may give rise to disturbance during the development such as smoke, noise, odours and dust. We will consult with the Environment Agency where pollution of groundwater of surface water is a possibility.

The procedure for considering land contamination can be outlined as follows:

**GROUNDS FOR SUSPECTING CONTAMINATION**
↓
**DESK TOP STUDY +/- SITE WALKOVER**
↓
**DEVELOPMENT OF SITE CONCEPTUAL MODEL**
↓
**SITE INVESTIGATIONS**
↓
**REMEDIATION STRATEGY**
↓
**REMEDIATION**
↓
**DEMONSTRATE SATISFACTORY OUTCOME**

**At the planning application stage we will consider**

*Information on contamination:*

- Has the site been classified as statutorily contaminated under Environmental Protection Act Part 11A?
- Is the site known or suspected to be in contaminative state?
- Are previous uses likely to have left the site in a contaminated state?
- Does the site require investigation prior to the determination of the application?
- Has the local authority gathered information on the site in meeting the requirements of Part 11A?
- Does the local authority possess any information on the type and extent of contamination?
- Have studies already been undertaken on the site?
- Is the developer in possession of relevant site information on contamination?
- Has the developer thoroughly investigated the site?

**At the remediation stage we will consider**

*Does the site require some form of remediation for its current/proposed use?*

Has the developer provided a strategy for the remediation of the site?

If so:

- Is the strategy suitable for the proposed use of the site?
- Have a number of remediation techniques been considered?
- Have suitable standards been employed?
- Does the remediation plan contain arrangements for checking compliance with the standards selected?
- Does the site require to be monitored on completion of the works? If so, what arrangements are proposed/required?

If not:

- Is a remediation strategy require before the application can be determined or can the necessary measures be applied through conditions?

**At the post remediation stage we will consider**

- Has the development been carried out in accordance with the approved plans?
- Has the developer complied with any planning conditions?
- Has the site been treated in accordance with the remediation plan?
- If required, have post-works monitoring procedures been put in place?

**The Developer's Responsibility**

**When commenting on contaminated land reports and proposed remediation strategies South Cambridgeshire District Council will not accept responsibility for the effectiveness of the design, completion of remediation measures and the safety of future occupiers. At all times this is the responsibility of the developers and their advisors. Developers should therefore fully appreciate the importance of competent professional advice, which must be supported by sufficient professional indemnity insurance.**

**3. The Site Investigation Procedure**

The site investigation procedure will identify the potential for contamination and identify possible areas that may require remedial works in order to make a site suitable for use. The site investigation can be done in phases in order that resources can be targeted at the areas that are most likely to be contaminated. The separate phases may be submitted individually, as separate reports, or as one combined report – i.e. Phase 1, or Phase 1 & 2 followed by a Post Remediation Verification Report.

- The Phase 1 investigation should establish whether there have been any former contaminative uses on the site or adjacent properties which could impact upon the development;
- The Phase 2 investigation should determine the nature, extent and severity of contamination using risk based criteria. It should provide details of remedial options, health and safety issues, potential impacts on the environment and a retailed work plan;
- The Post Remediation Verification Report should provide a summary of remedial works carried out together with relevant documentary evidence and post remediation test results.

The site investigation procedure involves specialist technical knowledge and it is essential that all phases of the site investigation procedure are conducted by competent and experienced people (who should hold recognised and appropriate qualifications). It is essential that developers conduct their site investigations in accordance with current good practice.

Examples of current good practice can be found in the following documents:

- BS 10175:2001 British Standard Institute (2001) Investigation of Potentially Contaminated Sites – Code of Practice, British Standard Institute, London.

- Environment Agency (2001) Secondary Model Procedure for the Development of Appropriate Soil Sampling Strategies for Land Contamination. R&D Technical Report P5-066/TR. Water Research Centre, Swindon.

- Environment Agency (2000) Technical Aspects of Site Investigation (2 Vols.). Research and Development Technical Report P5-065/TR. Water Research Centre, Swindon.

- Environment Agency (2000) Guidance for the Safe Development of Housing on Land Affected by Contamination. The Stationary Office, London.

### 3. 1 The Phase 1 Investigation Desk Top Studies +/- Walkover

*Purpose and scope*

The purpose and scope of the Phase One study should be clearly defined. A map of the site should be included showing its location (grid reference and address), as well as plans of the current and planned layouts of the site.
Appraisal of site history

The desktop study should be prepared describing the condition of the land and uses of the site - past and present - and its immediate environment. The aim is to establish whether there have been any contaminative uses of the site or nearby land, and whether they could have adverse impacts on or offsite. All documentary evidence should be referenced and summarised where appropriate.

There are many former land uses that are potentially contaminating and some sites my have had more than one use, either simultaneously or separated in time. Lists of potentially contaminative land uses are available, some of which also have ‘profiles’ indicating the possible activities and contaminants that might have been present. Such understanding is crucial in defining the need for and scope of any subsequent review, investigation and remediation. Experience and consideration of site histories should be used to predict the principal contaminants associated with each particular industry (see Appendix A).

A site is evaluated initially by compiling a site history (see Appendix B) with a view to determining the possibility of soil and groundwater contamination (including by gases). We expect to be provided with such information in full and may require it in advance of a planning decision or as a condition of a grant of permission.

*Assessment of environmental setting*

A traceable assessment of the environmental setting should include:

- Information on geology, hydrogeology and hydrology,
- Information from the Environmental Agency on controlled waters, abstractions, pollution incidents, water quality classification, landfill sites within 250m,
- Information on ecosystems, heritage and other interests.

*Review of earlier studies*

A review of any previous studies, ongoing monitoring, remediation work etc. should be provided for both the site and any adjacent sites.

*Reconnaissance*

A site walkover should be undertaken confirm the information in the desk-top study, locate and record condition of features and plan further site investigation works (if appropriate). Anecdotal evidence from local interviews may provide additional useful information.

*Site conceptual model*

A 'site conceptual model' of the site should be produced which provides a clear interpretation of all plausible pollutant linkages at the site. Receptors include humans, controlled waters, wildlife and buildings. Pathways include direct contact, inhalation, off-site migration into watercourses etc. The 'conceptual model' proposed will depend upon the previous site use and proposed development. In some circumstances there may be a large number of plausible pollutant linkages and in others there may only be a small number.

The 'conceptual model' should provide a working description of the relevant physical. Chemical and biological characteristics of the site including;

- Geology, Hydrogeology and Hydrology
- Ecology
- Land use – historic, current and proposed (including adjacent land)

- Identifying potential – Sources of contamination, Pathways and Receptors (i.e., significant pollutant linkages).

The conceptual model that is developed as part of the Phase 1 investigation should provide enough detail to determine what will be needed as part of a Phase 2 investigation. Documentary evidence such as historical maps, photographs and former site layouts etc. should be appended to any report to demonstrate how the conceptual model has been produced.

*Recommendations for Phase Two (where appropriate)*

Aims and objectives for Phase Two of the investigation should be stated. Health and Safety issues should be highlighted.

**We recommend that developers consult with us regarding the scope and execution required of Phase One assessments. We will scrutinise their content carefully when submitted.**

**Failure to demonstrate familiarity with a site's former uses and published information on their potential for contamination during initial review and further assessment will be regarded as a significant failing by a developer or consultant.**

### 3.2 The Phase 2 Investigation

*Objectives, scope and execution*

If site history or other information indicates that contamination is possible, the developer/site owner should engage an appropriately experienced environmental consultant to undertake further site assessment. We will require that the objectives, scope and execution of such assessments be agreed in advance and the resulting report/s provided in full. The expected contents of such reports are noted in Appendix C for reference.

The Phase 2 investigation needs to be based on the 'conceptual site model' produced as part of the Phase 1 study and should further characterise the contamination on the site. Each site is unique and should be dealt with on a site-specific basis.

The Phase 2 investigation may include targeted sampling of suspected 'hot-spots' of contamination or sampling using a statistically valid sampling strategy across the whole site. Every precaution must be taken to ensure that site investigations do not introduce or mobilise contaminants or create new pathways. Any visibly contaminated or odorous material encountered during site investigations should be investigated and the Environmental Health Department informed immediately.

The report should include full descriptions of surface and intrusive ground investigations, an assessment of ground conditions and the implications for contaminated land, the source, distribution and concentration of contaminants. This information should be used to re-evaluate the site conceptual model. Further investigative work may be required.

QA/QC

Good quality assurance and quality control procedures need to be followed during the collection of soil samples. After the samples have been collected they should be sent for appropriate analytical testing at a laboratory that holds a relevant UKAS accreditation for each contaminant. The quality assurance and quality control data and limits of detection for all tests carried out should be appended along with the results of the chemical analysis to the Phase 2 report.

Whilst many organisations are capable of undertaking some or all parts of a site assessment, the Council will have regard both to the full reports' content and to the authority of compiling organisations, their professional affiliations and demonstrable expertise. Assessments should be complete with sufficient detail to ensure that the assessment processes employed have been rational, ordered and efficient so as to reasonably assess the appropriated impacts of any land contamination present.

*Assessing the Risks*

Where detailed investigation is required at a site a risk assessment must be performed.

In the first instance the significance of each contaminant may be compared against an appropriate generic assessment criterion, i.e. CLEA guideline value, if one exists. Alternatively, other justifiable criteria may be used (if a CLEA guideline value does not exist) e.g. WHO/Drinking water Guidelines, Environment Agency, Environmental Quality Standards (EQS).

**N.B. The use of particular generic assessment criterion must be fully justified.**

Following the initial risk assessment against the appropriate guideline values a decision must be taken about the next course of action. This may be to either design a remediation scheme on the basis of the available data or to carry out a more comprehensive site-specific risk assessment using an industry standard model.

*Types of risk assessment model*

The CLEA model uses probabilistic techniques to assess the risks to human health from a contaminant, taking into account long-term exposure, ground conditions etc. There are a number of other risk assessment tools that have been developed for assessing risk to different receptor groups (e.g. SNIFFER, RBCA, RiscHuman,

Landsim). There is a recent update of SNIFFER which takes into account the new UK guidance from DEFRA. The Environment Agency has developed a site-specific model that assesses the risk posed to groundwater by leaching contaminants. The model is known as CONSIM (Contamination Impact on Groundwater: Simulation by Monte Carlo Method) and models contaminant mobilisation and transport. It is intended for use with commonly available ground investigation data.

It should be noted that not all contaminants may be covered by the above generic guidelines and that some generic guidelines may not always be appropriate for assessing potential risks to human health and the wider environment in the United Kingdom. Some allowance may have to be made to reflect assumptions that were made when the guideline values were derived in order to make them more appropriate for UK conditions.

**These models are not appropriate for all circumstances and clear explanation of the choice, type and limitations of any risk assessment model must be submitted to the Council. The risk assessor must justify each of the input parameters and effectively communicate their output to us.**

We will require further information where we are not confident about the conclusions reached (for example where an investigation has not been carried out in accordance with current good practice).

### 3.2 Remediation Options

*Selection of options*

The Phase 2 investigation may confirm possible pollutant linkages and if so should propose an appropriate remediation (scheme/selection of potential schemes) that will ensure safe redevelopment. The remediation options proposed should be related to the significant pollutant linkages that have been identified and should indicate the receptor(s) being protected.

There may be a number of remediation options, for example:

- To remove or treat soil or groundwater with contaminant levels above certain concentrations
- To biodegrade hydrocarbons to acceptable levels
- To block the pathway between the source and a receptor
- To cap the site, limiting the potential for contact with contaminated soil

The selection of the remediation strategy should be discussed with the advantages and disadvantages of each option outlined and reasons should be given for the chosen option, or combination of options.

*Others factors Continuous monitoring after remediation*

It should be noted that the remediation works might also require a waste management licence or mobile plant licence. When designing the remediation strategy, the Phase 2 report should also cover details such as the measures proposed to protect workers and the public and to ensure effective dist control.

On larger or complex sites an off-site impact assessment, monitoring and a risk communication strategy will be needed. Remediation strategies on such sites will need to include consideration and control of impacts during the remediation programme as well as the site situation post remediation.

**During remediation works if any unsuspected contamination is identified then the Environmental Health Department should be contacted immediately, in order to discuss a strategy for the treatment or removal of the contaminated material.**

We will require that an environmental consultant, or an appropriately qualified project manager, supervise any agreed required remediation of a contaminated site, including the documented identification, handling and fate of contaminating or contaminated material. The appointed persons or organisations will be responsible for the certification of the site remediation work and for its compliance with the agreement remediation plan, the recommendations of the consultant, and the requirements of other regulatory agencies for example the Environment Agency.

We expect that the means for demonstrating compliance to agreed in advance and this would typically require agreement on appropriate means of inspection, testing and quality assurance. Compliance with an agreed remediation or site management will be expected before any planning conditions can be discharged.

### 3.3 The Post Remediation Verification/Validation Report

It is important that remediation is undertaken in accordance with the proposed remediation strategy, and that accurate documentary evidence is maintained so that it can be summarised as part of a Post Remediation Verification Report. This report should identify actions carried out during the remediation works and methods of validation testing together with documentary records of implementation. This report should summarise the:

- Types of measures – testing (in-situ/lab), monitoring, inspection etc
- Number of samples/rate of testing/monitoring/locations
- Supervision during the remediation

The documentary evidence should include copies of waste transfer notes, photographs and results of chemical analysis of soils/groundwater undertaken during remediation (including each batch of soils and materials to be tested prior to being brought onto the site, from off-site sources). The Post Remediation Verification Report should be submitted to the Council at the end of any remediation work.

## 4. Key Points

- It is important to identify the potential for contamination to be present at an earl stage in order that unexpected costs and delays can be avoided later should a potential problem be identified during development works.

- Specialist advice from a suitably qualified consultant is required to assess contaminated land issues.

- The Phase 1 investigation should produce a 'conceptual model' that characterises all plausible pollutant linkages. This will form the basis of any subsequent work undertaken as part of a Phase 2 investigation.

### Role of the Environment Agency

The Environment Agency is a statutory consultee in England and Wales under the planning process on the matters for which it has regulatory responsibility. SCDC will consult with the Environment Agency on applications where pollution of surface water or groundwater is involved, or where the water environment might be at risk of pollution as a result of the development. The Environment Agency also provides advice on applications for development close to or on landfill sites and within flood-plain areas.

In addition to the planning permission normally required for new buildings or changes of use, other projects involving contaminated land may also require planning permission and/or Environment Agency approvals if any of the following conditions apply:

- There is on-site disposal of controlled waste;

- There is proposed on-site remedial treatment;

- Engineering works are to be carried out as part of the remedial treatment;

- Treatment is part of a development for which planning permission is required; or

- Ground investigation works are to be carried out.

**Part 11A, Environmental Protection Act 1990**

Part 11A of the Environmental Protection Act 1990 was brought into force on 1st April 2000. It requires local authorities to identify contaminated land in its area and secure its remediation. Part 11A provides a narrow definition of contaminated land. To fall within this definition the land, when assessed in the context of its current use must be capable of causing either significant harm or the significant possibility of significant harm to human health and/or to other specified receptors, or pollution of controlled waters or the significant possibility of pollution of controlled waters. Where contaminated land is identified, details of the contamination and any remediation undertaken will be placed on a Public Register. The narrow definition of contaminated land means that the number of sites that will be determined as contaminated land by the Council is likely to be small.

A site that contains contaminants, which in its current use does not have the potential to cause significant harm will fall outside Part 11A. It is government policy that these sites will be dealt with through the planning and development control system as and when they are brought forward for development. In such circumstances the developer must provide the Council with enough information to enable it to decide that the site will be suitable for use. For some sites that are identified as contaminated land under Part 11A, redevelopment of the land may be a cost-effective solution for securing remediation. In such circumstances action taken under the planning regime to ensure that land is suitable for use would also satisfy the Part 11A regime and turn a liability into an asset.

**Additional Reference Material**

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## APPENDIX A

## Examples of Potentially Contaminating Site Uses

- Analysis – laboratory sites
- Any area where persistent pesticide treatments may have been applied
- Areas where biological materials have been bred, used or stored
- Agricultural: fertilisers, garden sprays, pesticides, herbicides, cat and dog dusting powders.
- Battery manufacturers including any site where lead cell accumulators were destroyed for scrap.
- Brake lining manufacturers or repairers
- Chemical Manufacturers
- Defence works
- Dry cleaning establishments
- Electroplaters
- Fuel depots
- Galvanisers
- Gas works
- Gun clubs
- Industrial cleaners
- Industrial:: glues, paints, household cleaners, bleaches, sprays, pool chemical, bitumen, oils and greases, petroleum, petrochemicals, stores.
- Landfills
- Lime burners
- Market gardens, other areas where agricultural chemicals may have been used
- Metal foundries
- Metal spraying
- Metal treatment, heat treatment, picklers
- Mining and extractive industry
- Patent medicine producers and stores
- Pest controllers in particular chemical stores and area where vehicle and tanks are washed.
- Petroleum and petrochemical industries
- Pharmaceutical drug manufacturers
- Plasters manufacturers and moulders
- Printers
- Railway yards
- Scrap yards
- Service stations (including mechanical repairers)
- Stock dipping (e.g. sheep, cattle)
- Tanners, curriers and fellmongers
- Transport depots
- Underground storage tanks for fuel, chemical storage and liquid waste
- Warehousing and storing
- Waste storage
- Wood treatment
- Wool hide and skin merchants (e.g. drying, scouring)

Note:
This list is not exhaustive and other potentially contaminating activities must be considered.

**APPENDIX B**

**Information for Compiling a Site History**

## Include in Site History

- proposed, present and past land uses
- processes carried out on site (and location if applicable)
- waste disposal practices and chemical spills
- earthmoving activities, including filling, carried out on site
- site description, and legal identifiers
- past and present land use, zoning per Development Plan

## Sources of Information

- past and current owners of the site
- past and current employees of the site and neighbouring sites
- aerial and ground level photographs of the site
- past involvement with Government authorities
- past involvement with consultants
- trade and street directories
- local literature, including street directories
- technical literature, including building and related permits
- local knowledge of residents
- previous land uses
- products manufactured
- raw materials used
- waste produced
- chemical storage and transfer areas
- disposal locations
- product spills and losses
- geological survey maps
- sewer and underground service plans

## Site Inspection

Indicators of the possible presence of contaminants are:

- disturbed of discoloured soil
- disturbed or affected vegetation
- presence of chemical containers or holding tanks
- chemical odour
- quality of surface water.

**APPENDIX C**

**Contaminated Site Assessment Reports** – suggested content/format

## Phase 1 – Desk top study

### 1 Site identification

- Purpose and aims of study
- Scaled map showing position of site relative to sheets and adjoining properties
- Details of surface features and existing structures above and below ground
- Photographs, where appropriate

### 2 Ownership

- As listed on title documents

### 3 Party requesting assessment

- Owner or occupier of land (developer)

### 4 Party conducting assessment

- Environmental consultant

### 5 Proposed use

- Map of proposed development (if known)
- Type: residential/recreational/industrial

### 6 History of site (See Appendix B)

- Full history
- Sources of information
- Map (s) detailing past activities

### 7 Site Inspection – walkover

- Relevant geological factors
- Local topography
- Soil types
- Evidence of possible contamination
- Potentially contaminating features and installations

### 8 Site Inspection – research

- Information from the Environmental Agency on abstractions, pollution incidents, water quality classification, landfill sites, soil leaching potential, water resource status, current and future use of local groundwater, hydrogeology including depth and distribution of aquifers
- Information from South Cambridgeshire District Council on former landfill sites, private water supplies, contaminated land, pollution incidents
- Information from other bodies e.g. BGS, Landmark etc
- Review of previous studies

- Preliminary assessment on likely risks and recommendations for intrusive works if appropriate
- Conceptual site model

## Phase 2 study – Intrusive investigations

### 1 Initial comments

- Review of previous studies

### 2 Investigations

- Rationale for sampling methodology (e.g. screening knowledge of previous land use)
- Rationale for choice of analytes
- Scaled map of sampling locations
- Methods of investigation (e.g. number of boreholes, depths, pattern)
- Sampling methods, storage, maintenance of sample integrity
- Field measurements, instruments, and methods
- Laboratories used
- Analytes and analytical techniques (including extraction methods)
- Quality assurance methods for specific analytes
- Table of results
- Map displaying significant results
- Borehole log and soil profile (including description of fill)

### 3 Conclusions

- Discussion of ground conditions, (soil, gas, water, made ground)
- Discussion of soil/gas/water contamination
- Preliminary conclusions (e.g. most significant results, dispersion of contaminants, properties of contaminants that may affect health or environmental risk such as volatility or water solubility)
- Uncertainties relating to conclusions (e.g. adequacy of site characterisation, likelihood of missing significant contamination)
- Changes to site conceptual model from initial study
- Risk assessment, justifying choice of model if used
- Recommendations for further investigations if required
- Recommendations for remediation

**APPENDIX D**

**Remediation checklist**

**1 Objectives**

- Define purpose, scope and specific objectives
- Identify receptors to be protected

**2 Works outline**

- Description of ground conditions
- Type, form and scale of contamination to be remediated
- Methodology
- Site plans
- Phasing of work and timescales

**3 Consents, agreements and licences**

- Discharge consents, waste management licences required

**4 Site management procedures**

- Procedures in place to protect site neighbours, environment
- Site management procedures to protect site neighbours, environment and amenity during works, i.e. Health and Safety issues, including site security, dust, noise, odour controls, Control of surface run-off

**5 Variations**

- Details of how variations from the approved method statement will be dealt with

**6 Evaluation**

- Sampling strategy
- On-site observations
- Chemical analysis
- Remediation standards

**APPENDIX E:**

**Validation/verification checklist**

**1 Summary of Remediation procedures**

- Identify who carried out the work
- Detail and justify any changes

**2 Substantiate the data**

- Post-remediation sampling
- On-site and laboratory testing
- Sampling and monitoring results
- Summary data plots and tables relevant to remediation criteria

**3 Confirmation**

- Confirmation that remediation objectives have been met
- Recommendations for future maintenance, monitoring and reporting

# APPENDIX 6

## NOISE DEAILED GUIDANCE

**1.0: General Requirements for Noise**

**2.0: Planning and Noise**
**2.1: Principles of PPG 24**

**3.0: When is a noise assessment required?**
**3.1 Planning and design: submission requirements**

**4.0 Noise Sensitive Development proposed in a noisy environment**

**5.0: SCDC Outdoor and indoor noise level standards / criteria for Noise Sensitive Development**

**6.0: Noise sensitive residential development on a site dominated by an existing industrial type noise source only: BS 4142 assessment of acceptability**

**7.0: Noise Generating Development**
**7.1 Noise Generating Development Environmental Noise Standard**
**7.2 Delivering / Securing The Noise Standard for Noisy Development**
**7.3 Demonstrating Compliance with the Standard**

**8.0: Achieving acceptable Noise Levels Standards / Criteria**
**8.1: Sound-conscious urban design concept**

**9.0: Vibration**

**10.0: Sound Insulation: Inside and Between Residential Dwellings**

**11.0: Sound Insulation between Commercial/Residential Dwellings**

**12.0: Noise from Air Fields**
**Assessment of Air Craft Noise Impact**

**13.0 Design and Specification for Noise Barriers**

**14.0 Demolition / Construction Noise and Vibration**

**Current Noise Standards & References**

**Further Information / Contacts**

**Policy & Plans**

# NOISE: SUPPLEMENTARY DESIGN GUIDE

## 1.0: General Requirements for Noise

Planning applications for residential and industrial / commercial developments including places of entertainment and all applications where plant and equipment is proposed may need to be submitted with a noise survey and impact assessment prepared by a competent acoustician who should be a member of the Institute of Acoustics.

The report should assess the impact of noise as a material consideration and give recommendations and specifications of noise mitigation measures / works, where necessary, that are required in order for the development to comply with SCDC's noise design requirements for new development.

When a site requires acoustic protection it should be considered at an early design stage.

## 2.0: Planning and Noise

Planning Pollution Guidance 24 (PPG 24: 1994) guides Local Planning Authorities (LPAs) on the use of their powers to minimise the adverse effects of noise and outlines the considerations taken into account in determining planning applications both for noise-sensitive premises and for those, which generate noise.

PPG 24 acknowledges that noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities, so its consideration and control is an important part of sustainable development in providing a healthy and quality living environment and is integral to place making.

With higher densities, more mixed-use development, and more demand for late night activities, good acoustic design needs to be actively promoted if noise is not to become a threat to SCDC growth areas and quality of life. Environmental Health Officers and/or acousticians should be involved at an early stage.

Noise can be a material consideration in the determination of planning applications and the planning system is tasked with guiding development to the most appropriate locations.

### 2.1: Principles of PPG 24

The underlying principles of PPG 24 advocate the use of the planning system to ensure that, wherever practicable:

- New noise-sensitive developments are separated from major sources of noise such as road, rail and air transport and certain types of industrial development having regard to both the likely level of noise exposure at the time of the

application and any increase that may reasonably be expected in the foreseeable future

- New development involving noisy activities that have the potential to generate noise should, if possible, be sited away from noise-sensitive land uses.

PPG 24 considers that housing, hospitals and schools should generally be regarded as noise-sensitive development.

Planning balances various competing environmental, social and economic needs and where it is not possible to achieve separation of incompatible land uses, for example noise sensitive development from noisy activities, local planning authorities should consider whether it is practicable to control or reduce noise levels by careful urban design, or to mitigate the impact of noise, through the use of conditions or planning obligations.

## 3.0: When is a noise assessment required?

As part of the 1App planning application procedure, SCDC local requirements require the submission of noise information / assessment if it is considered a determining factor. It is not always obvious when and what level of noise information is required and government guidance recommends that the local planning authority LPA should not require a level of detail to be provided that is unreasonable or disproportionate to the scale of the application.

To ensure a smooth passage through the planning system, even when a full environmental assessment is not mandatory, proposals for developments on noisy sites, or sites which generate noise should take account of noise.

### 3.1 Planning and design: submission requirements

The recommended sequence of stages in the planning and early design stages of noise sensitive development in a noisy area or a noisy development is as follows:

a. Consult with the Environmental Protection Section of Health & Environmental Services of the local authority to discuss the local area, any existing or envisaged noise issues and the need for and type of noise assessment that may be necessary.
b. Visit the proposed development location and carry out a site walk over, to assess the site and current noise climate. Identify any significant noise and vibration sources that exist and consider any envisaged / future noise that could have an impact on the proposed noise sensitive development and or identify existing noise sensitive receptors that could be adversely affected by a noisy development.
c. If noise impact is likely to occur undertake a full representative noise assessment of the existing noise environment by measuring and or estimating / predicting noise levels in accordance with PPG 24 and report the impact of noise. The

remit of any noise assessment should be agreed in principle with the environmental health service of the local planning authority.

d. Evaluate layout options.
e. Determine noise criteria and limits for internal noise levels for noise sensitive development / building(s) having regard to the specific standards required by the LPA.
f. Determine noise criteria and limits for external spaces in and around the building(s) for example private amenity spaces such as gardens or balconies, common amenity areas, public open spaces having regard to the specific noise standards required by the LPA.
g. Determine environmental noise criteria and limits for noisy development (building(s), operational noise and or plant) having regard to the specific standards required by the LPA.
h. Consider whether noise mitigation measures can be designed into the development to achieve an acceptable noise environment for noise sensitive development and or mitigate noisy development that may have an adverse impact on existing noise sensitive premises, this can be considered sound conscious urban design.
i. Consider internal sound insulation requirements for noise sensitive development.
j. Consider the sound insulation of the building envelope / fabric for noise sensitive development and a noise insulation / attenuation scheme for noisy development to achieve the specific noise standards required by the LPA, but only after considering measures that can be implemented by noise conscious urban design
k. Submit a noise assessment with the application reporting the influence / impact of noise with recommendations and noise insulation / mitigation measures to ensure an adequate level of protection against noise to meet the Council's recommended outdoor and indoor noise levels and other noise standards.

The following table may help assist in undertaking a simple desktop assessment to analyse the issues and constraints. However it is essential that applicants visit the development site prior to undertaking this task to establish site conditions and noise sources.

| Potential Noise Constraint | Constraint affects Site |
|---|---|
| Noise sensitive development (housing for example) proposed close to a busy/noisy highway, railway, or near an airport or aerodrome | Y/N |
| Noise sensitive development (housing for example) proposed close to an existing noise source on an adjacent site (i.e. noisy factory or plant attached to a building) | Y/N |
| Does the development proposed include noisy operations or plant and is there a noise sensitive development on adjoining sites i.e. housing, schools etc. | Y/N |
| Will the development require noisy construction techniques to be used e.g. piling, use of generators, concrete breaking, etc | Y/N |

| Potential Noise Constraint | Constraint affects Site |
|---|---|
| Will the building be used and operated at anytime between 23.00 and 07.00 including vehicles for deliveries and collections | Y/N |

If any of the questions are answered as yes then a further detailed noise assessment will be required. At this stage it is often cost effective to engage the services of an acoustic consultant.

There are two main scenarios that are likely to arise when noise will require assessment:

**a) Firstly, noise sensitive development proposed in a noisy environment.**

**This includes the introduction of new noise sensitive development such as new residential dwellings, schools and hospitals into or locating near to an existing noisy environment:**

Existing environmental noise sources are likely to be road, rail traffic, aircraft, commercial / industrial and or agricultural related and existing building services plants or equipment. One or a combination of the aforementioned noise sources may dominate the noise. An assessment of the impact of existing noise on occupiers of the proposed developments will be required. It is important to note

**b) Secondly, new development which generates noise:**

**Introducing noisy development near to existing noise sensitive premises, such as residential.**

Applications for development that have the potential to generate noise are likely to be commercial / industrial and agricultural uses with associated process equipment and or building services plant of one description or another, usually air-conditioning / ventilation equipment. In addition, noise associated with vehicular movements to a development for example deliveries / collections or a significant increase in general traffic movements off site outside the development site can also have an impact on residents. Applications associated with pubs, clubs and places of entertainment are dealt in the attached appendix on other noise issue. An assessment of the impact of noise from these developments on existing residential occupiers as a result of these proposed developments will be required.

## 4.0 Noise Sensitive Development proposed in a noisy environment

When considering a site for residential development that is likely to be exposed to noise from existing sources, the suitability of the site for development should be assessed in accordance with the principles of Planning Policy Guidance Note 24:

Planning and Noise: 1994, (PPG24), and BS 8233: 1999: Sound Insulation and Noise Reduction for Buildings - Code of Practice.

The approach of PPG 24 is to assess sites according to various Noise Exposure Categories (NECs). The approach is set out in Annex 1 of PPG 24 "Planning and Noise" (September 1994). This SPD guidance takes account of PPG 24 and local circumstances. When assessing a proposal for residential development exposed to existing environmental noise, the SCDC Environmental Protection Section will use Table 1 to determine which of the four Noise Exposure Categories (NECs) A to D the proposed development site falls into, taking account of both day and night-time noise levels.

Category A, represents the circumstances in which noise is unlikely to be a determining factor, while Category D relates to the situation in which development should normally be refused. Categories B and C, deal with situations where noise mitigation measures may make development acceptable.

Values in Table 1 refer to average free-field noise levels determined for an open site at the position of the proposed dwellings, situated away from any existing buildings. Noise levels should be determined at a height of 1.2m to 1.5m above ground level at the position of the proposed dwelling. Noise levels at upper or lower floor levels should also be established if significant differences in noise exposure are anticipated at different floor levels.

In accordance with paragraph of PPG 24 where the average is on the boundary between NEC's B and C, it will be for the local planning authority to determine the more appropriate NEC for the proposal. Where existing buildings, bunds or screens affect sites, specific advice should be sought from the Council's Environmental Protection Section.

**Table 1: NEC's For New Dwellings Near Existing Noise Sources**

| **Noise Levels[0] Corresponding to the Noise Exposure Categories (NEC) for New Dwellings $L_{AeqT}$ dB Near Existing Noise Sources** | | | | | | |
|---|---|---|---|---|---|---|
| | **Times** | **Existing Noise Source** | | | | **Advice on treatment of residential planning applications in areas of each NEC** |
| | | **road traffic** | **rail traffic** | **air traffic** | **mixed sources[3]** | |
| **A** | 07.00 - 23.00<br>23.00 - 07.00[1] | <55<br><45 | <55<br><45 | <57<br><48 | <55<br><45 | **Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **B** | 07.00 - 23.00<br>23.00 - 07.00[1] | 55 - 63<br>45 - 57 | 55 - 66<br>45 - 59 | 57 - 66<br>48 - 57 | 55 - 63<br>45 - 57 | **Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protections against noise to meet the Council's recommended outdoor and indoor noise levels** |
| **C** | 07.00 - 23.00<br>23.00 - 07.00[1] | 63 - 72<br>57 - 66 | 66 - 74<br>59 - 66 | 66 - 72<br>57 - 66 | 63 - 72<br>57 - 66 | **Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise to meet the Council's recommended outdoor and indoor noise levels** |
| **D** | 07.00 - 23.00<br>23.00 - 07.00[1] | >72<br>>66 | >74<br>>66 | >72<br>>66 | >72<br>>66 | **Planning permission should normally be refused** |

**Notes**

[0] **Noise levels**: the noise level(s) ($L_{Aeq,T}$)used when deciding the NEC of a site should be representative of typical conditions at the position of the proposed dwellings.

[1] **Night-time noise levels (23.00 - 07.00)**: sites where individual noise events regularly exceed 82 dB $L_{Amax}$ (S time weighting) several times in any hour should be treated as being in NEC C, regardless of the $L_{Aeq,8h}$ (except where the $L_{Aeq,8h}$ already puts the site in NEC D).

[2] **Aircraft noise**: daytime values accord with the contour values adopted by the Department for Transport which relate to levels measured 1.2m above open ground. For the same amount of noise energy, contour values can be up to 2 dB(A) higher than those of other sources because of ground reflection effects.

[3] **Mixed sources**: this refers to any combination of road, rail, air and industrial noise sources. The "mixed source" values are based on the lowest numerical values of the single source limits in the table. The "mixed source" NECs should only be used where no individual noise source is dominant.

**Adapted from PPG 24: Planning & Noise**

The categorization of a site into a residential NEC should only be viewed a first step that determines in principle the suitability of the site for development. It can be seen that the noise level ranges used to determine each respective NEC are broad in nature and should be interpreted carefully. It should be noted that some of the figures used to determine the various noise levels are based on research findings that have been superseded by revised guidance.

Sites falling into NEC D shall be subject to early discussion with the appropriate Officer of the Environmental Protection Section within Health & Environmental Services. The guidance in PPG24 is such that sites should normally be refused planning permission on noise grounds. Only in exceptional and justified circumstances will development be permitted on NEC D and only when the noise standards can be achieved.

## 5.0: SCDC Outdoor and indoor noise level standards / criteria for Noise Sensitive Development

Following the PPG24 NEC procedure the suitability of the site for noise sensitive development will be determined in principle. The next step will be to consider any noise reduction measures that can be designed into the proposals and or a noise insulation scheme to buildings as necessary to meet the Council's recommended outdoor and indoor noise levels to ensure an adequate level of protections against noise.

SCDC will expect any noise sensitive residential development to achieve the noise level criteria detailed in Table 2 below, which are based on BS 8233: 1999: Sound Insulation and Noise Reduction for Buildings - Code of Practice.

BS 8233 provides information on the design of buildings to have internal acoustic environments appropriate to their functions. It deals with control of noise from outside the building, noise from plant and services within it, and room acoustics for non-critical situations. These criteria and limits are primarily intended to guide the design of new or refurbished buildings undergoing a change of use, rather than to assess the effect of changes in the external noise level.

The planning application and any associated noise assessment shall include recommendations and proposals to achieve the noise criteria detailed.

**Table 2: Noise standards for noise sensitive development: external noise affecting new housing, hostels and hotels**

| Area | Noise Criteria |
|---|---|
| **External Private Amenity Areas e.g. gardens & balconies and Communal Gardens** | Levels should be as low as practicable and not greater than 50dB $L_{Aeq,1hr}$ 0700-2300hrs |
| **Bedrooms** | Not greater than 30dB $L_{Aeq,1hr}$ 2300-0700 hrs<br>No single peak noise events greater than 45 dB $L_{Amax,1hr(fast)}$ 2300 – 0700 hrs |
| **Living rooms & dining rooms** | Not greater than 35dB $L_{Aeq,1hr}$ 0700-2300 hrs. |
| **Kitchens/bathrooms/utility rooms** | Not greater than 45dB $L_{Aeq,1hr}$ 0700 - 2300hrs |
| **These recommended levels are derived from Table 5 of BS 8233 'Sound Insulation and Noise Reduction for Buildings CofP'.**<br><br>**Note 1:** At BS 8233: 1999, at paragraph 7.6.1.2 it is stated – "…….As well as protection for buildings, barriers or bunds should be considered to protect the gardens. In gardens and balconies etc., it is desirable that the steady noise level does not exceed 50 $L_{Aeq,T}$ dB and 55 $L_{Aeq,T}$ dB should be regarded as the upper limit".<br>**Note 2:** Internal building services noise generated from ventilation systems and lifts etc should meet the same criteria as specified above. | |

Internal noise levels for other types of development are detailed in table 3 .

**Tale 3: Noise Standard for other buildings**

| Type of Development<br>Area | Noise Criteria |
|---|---|
| **Educational Buildings** | |
| Workshops and practical areas | <50dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |
| Libraries & individual study spaces | <45dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |
| Small lecture or seminar rooms, and offices | <40dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |
| Classrooms, lecture rooms & language laboratories | <35dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |
| Music & drama spaces | < 30dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |
| **Public Libraries** | < 45dB $L_{Aeq,\ 1\ hr}$ 09.00-22.00 hrs |
| **Law Courts & Council Chambers** | <35dB $L_{Aeq,\ 1\ hr}$, 0900-23.00 hrs |
| **Concert Hall, Opera House & Large Theatre** | <25dB $L_{Aeq,\ 1\ hr,}$ 07.00-23.00 hrs |
| **Small Theatres** | <30 dB $L_{Aeq,\ 1\ hr}$, 07.00-23.00 hrs |

| | |
|---|---|
| **Hospitals, Clinics and Welfare Buildings** | |
| Operating theatres, reception areas | <35 dB $L_{Aeq, 1 hr}$, 07.00- 23.00 hrs |
| Wards ( including day recovery rooms) | <30 dB $L_{Aeq, 1 hr}$, 23.00-07 00 hrs |
| Kitchens, laundry, physiotherapy, X ray utility and store rooms | <45 dB(A) $L_{eq}$ 1 hour 07.00- 23.00hrs |
| **Office Buildings** | |
| Private offices & small conference rooms | < 40dB(A) $L_{eq}$, 1 hour, 07.00- 23.00hrs |
| Large Open Plan Offices | < 45dB(A) Leq, 1 hour, 07.00- 23.00hrs |
| **Note 1**: The revised approved document E of the Building Regulations came into force in July 2003. One of the consequences is that new and refurbished schools will have to meet strict standards for noise levels, insulation and room acoustics. These standards are set at Section 1 of the DfES Building Bulletin 93, "Acoustic Design of Schools", February 2003. Building Control Officers of Local Authorities will have responsibility to ensure that the standards are complied with. A liaison will take place between Environmental Health and Building Control at Ealing for the purpose of ensuring that classrooms are adequately insulated against transportation noise sources. Noise from schools to surrounding areas is still controlled under planning legislation.<br><br>**Note 2:** National Health Service Estates, has produced a series of Hospital Building Notes. | |

## 6.0: Noise sensitive residential development on a site dominated by an existing industrial type noise source only: BS 4142 assessment of acceptability

It should be noted that the concept of Noise Exposure Categories (NEC's) in PPG 24 is only applicable for new noise sensitive development such as residential near transport related noise sources that dominate the ambient noise level including a mixed noise site where industrial noise is present but not dominant.

PPG 24 states that "NEC noise levels should not be used for assessing the impact of industrial noise on proposed residential development because the nature of this type of noise, and local circumstances, may necessitate individual assessment".

Annex 3 paragraph 19 of PPG 24 advises that for residential exposed to noise dominated by an industrial type source the recommended method of determining noise acceptability is to use BS 4142 1997: Method for rating industrial noise affecting mixed residential and industrial areas.

Due to its variable character, industrial noise is not straightforward and is difficult to assess in the context of its impact on amenity.

The standard itself offers no test of acceptability, in determining whether a proposed site is suitable for residential development when near an existing industrial type noise source. PPG 24 only infers that that the "likelihood of complaints" assessment

method, which is predictable to a degree using BS 4142, should be the basis of acceptability for new noise sensitive residential premises when industrial type noise is dominant. Whilst a useful guide, BS 4142 should not be solely relied upon to accurately establish the impact of industrial development in terms of noise. The likelihood of complaints does not necessarily equate to protection of amenity or to ensure the provision of a quality living environment.

The standard takes a relative assessment approach to noise and uses comparisons between the measured background levels of a location in the absence of a noisy industrial type activity / process and the anticipated noise levels from the proposed or existing activities, to ascertain a 'rating level to gauge "the likelihood of complaints". The BS 4142 assessment method suggests that, in general:

- an increase in 10dB or more indicates that complaints are likely
- a difference of 5dB is likely to be of marginal significance,

Any noticeable acoustic features such as, tonal or impulsive characteristics are likely to increase the likelihood of complaints and this is taken into account by the 'rating level' defined in BS 4142, a 5dB correction penalty is added. Since background noise levels vary throughout a 24 hour period it will usually be necessary to assess the acceptability of noise levels for separate periods (e.g. day, evening, night and weekend) chosen to suit the hours of operation of the proposed development.

As stated, BS 4142 offers no test of acceptability in terms of suitability of a site for noise sensitive development. In the absence of such guidance SCDC will use the following rating levels in relation to existing background noise levels to categorise the site, at an appropriate location for proposed residential buildings:

- an increase in 10dB or more indicates that noise complaints are likely: the site should be placed in NEC D, that is **"Planning permission should normally be refused"**

- an increase between 5 to 10dB indicates that noise impact is significant: the site should be placed in NEC C, that is **"Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise"**

- a difference of 1 to 5dB indicates that noise impact is likely to be of marginal significance: the site should be placed in NEC B, that is "**Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protections against noise** to meet the Council's recommended outdoor and indoor noise levels

- - 10dB or more - complaints unlikely: the site should be placed in NEC A

If industrial noise contains dominant tonal frequencies, these should be given special consideration as difficult to measure, assess and mitigate.

In applying BS 4142 due to the methodology employed the significance of absolute levels should not be ignored and SCDC outdoor and indoor noise level standards / criteria for noise sensitive development will also need to be considered.

In particular the noise impact of operational noise on proposed external amenity areas such as gardens and balconies and the number and peak noise incidents / levels such as LAmax, require very careful consideration.

Where the predictive BS 4142 assessment indicates that complaints from occupiers of new residential dwellings would be likely as a result of noise from existing industrial/commercial noise sources, the application is likely to be refused. Locating noise sensitive development near existing noisy is particularly problematic if noise is a issue as the options to mitigate noise can be limited. The applicant would need to otherwise demonstrate that they are in negotiation with the owners of the industrial/commercial facilities to control and reduce noise sufficiently such that complaints are unlikely.

The control of existing industrial / commercial is not straightforward as it is not possible to impose conditions requiring noise mitigation measures off site outside the development / application site which is not in the control of the applicant. In such cases section 106 planning obligation may be with the owners of noise sources off-site to secure noise mitigation measures but this will require very careful consideration, as there is no guarantee that measures will be implemented.

## 7.0: Noise Generating Development

Applications for development that have the potential to generate noise (noisy development) such as commercial / industrial and agricultural uses with associated process equipment and or building services plant of one description or another, usually air-conditioning / ventilation equipment and in particular when they have the potential to have an impact on existing noise sensitive development and or tranquil areas require careful consideration. Such applications may need to be submitted with a noise assessment.

The concept of Noise Exposure Categories (NEC's) in PPG 24 is only applicable for new noise sensitive development. For new noisy development PPG 24 recommends the use BS 4142 1997: Method for rating industrial noise affecting mixed residential and industrial areas.

### 7.1 Noise Generating Development Environmental Noise Standard

All noisy development will need to be controlled in order to protect existing residential amenity and limit creeping background noise levels. The Environmental Protection Section of Health & Environmental Services will only recommend approval of a

planning application for noisy development when it can be demonstrated that the following standard can be achieved:

***the noise level from any industrial / commercial type development including processes and all powered plant, vents and equipment, that may operate collectively and having regard to a worst case operational scenario (operating under full capacity / power / load), shall not increase / raise the existing concurrent lowest measured representative background level dB $L_{A90,1hr}$ ($L_{90}$) during the day between 0700 to 2300 hrs and the existing lowest background level dB $L_{A90,5mins}$ ($L_{90}$) during night time between 2300 to 0700 hrs, at the boundary of the premises subject to this application (or if not practicable at a measurement reference position / or positions in agreement with the LPA) and having particular regard to noise sensitive premises. Noticeable acoustic features and in particular tonal/impulsive noise frequencies should be eliminated or at least considered in any assessment and should carry an additional 5 dB(A) correction.***

### 7.2 Delivering / Securing The Noise Standard for Noisy Development

This standard could be secured in a number of ways, such as the imposition of a condition requiring the full implementation of an acceptable noise assessment that has been submitted with a planning application and which details noise mitigation measures / recommendations that can achieve SCDC noise standard for noisy development.

In the absence of an acceptable noise assessment the approval of a planning application for noisy development will only be recommended if Environmental Health conclude that the SCDC noise standard for noisy development can be readily and reasonably achieved.

If a detailed noise predictions / assessment for noisy development is not provided any noise assessment that accompanies the 1App planning application should at least include a design environmental noise criterion to be achieved at the boundary of the site, to mitigate the impact of noise on existing noise sensitive premises to an acceptable level. In such cases a condition will be imposed requiring a noise insulation scheme for buildings, processes and plant / equipment which demonstrates that SCDC noisy standard for noisy development can be achieved, to be submitted in writing for approval by the local planning authority and any approved scheme shall be implement prior to the commencement of use.

In addition to being applied to purely industrial sites and cases where industrial plant machinery is in use, the standard should also be applied to the following scenarios:

- Premises where there are manoeuvring lorries, which are loaded or unloaded by forklift trucks (or tailgate).
- Premises where there are manoeuvring lorries on which an on board refrigeration plant is run or charges.

- Extract ventilation plant at restaurants.
- Development with mechanical services plant and other equipment.
- Loaders, dumpers and haulage vehicles etc operating in yards handling building materials or at waste disposal sites etc.
- Waste Disposal / Transfer Sites, including Material Recovery Facilities (MRF)
- Non residential uses expect when residential includes renewable energy plant and equipment

The use of BS 4142 for a noise assessment should be agreed in principle with an officer of the Environmental Protection Section of Health & Environmental Services.

The noisy development standard will also guard against any creeping background noise in the area whilst safeguarding the health and amenity of residential occupiers in the area, preventing unreasonable noise disturbance to other premises.

### 7.3 Demonstrating Compliance with the Standard

To demonstrate this requirement it is recommended that the agent/applicant submits a noise assessment survey/report in accordance with the principles of BS4142: 1997 "Method for rating industrial noise affecting mixed residential and industrial areas" or similar. In addition, to validate / verify any measured noise rating levels, noise levels should be collectively predicted at the boundary of the site having regard to neighbouring residential premises.

Such a survey / report should include: a large scale plan of the site in relation to neighbouring noise sensitive premises; with noise sources and measurement / prediction points marked on plan; a list of noise sources; details of proposed noise sources / type of plant such as: number, location, sound power levels, noise frequency spectrums, noise directionality of plant, noise levels from duct intake or discharge points; details of noise mitigation measures (attenuation details of any intended enclosures, silencers or barriers); description of full noise calculation procedures; noise levels at a representative sample of noise sensitive locations (background $L_{90}$) and hours of operation. Any report shall include raw measurement data so that conclusions may be thoroughly evaluated and calculations checked. Any ventilation system with associated ducting should have anti vibration mountings.

When considering any proposal for noisy development industrial, commercial or recreational development, the Council will take into account increase in road traffic noise and vehicular movements that might arise as a result of such development and the difficulties in controlling noise both on and off site from vehicles. The Council may seek, by condition or agreement with the developer, to minimise traffic noise from the proposed development.

Where planning permission is granted for any business use or development in a particularly sensitive location near to noise-sensitive development, the Council may seek to restrict that use to office accommodation only (Use Class B1(a)).

## 8.0: Achieving acceptable Noise Levels Standards / Criteria

Mitigation of the effects of noise can be achieved by:

v. control at the source (measures to reduce noise emissions at source such a quiet plant, noise insulating buildings, plant enclosures or quiet road surfaces and or noise barriers);
vi. control of the transmission path (adequate distance separation, building location, form and orientation, screening / noise barriers);
vii. control of noise at receiver (internal planning such as non habitable rooms providing a buffer, orientation of noise sensitive rooms and balconies and gardens way from noise by barrier dwelling blocks, single aspect courtyards schemes and staggered terraces, careful fenestration, noise insulation scheme for the building envelope of noise sensitive buildings and also buildings generating noise, reduced external amenity, acoustic ventilation)
viii. by controls over the operations that generate the noise (such as controls over the hours of operation, deliveries / collections).

The applicant is encouraged consult the LPA at an early stage about the possible use of such measures and whether they are desirable or achievable, as this may enable the incorporation of such noise mitigation measures into the design of the proposal before it is formally submitted for determination. Noise mitigation measures integrated into the overall design of the development should be first in a hierarchy of noise mitigation measures. The control of the noise at the receiver in terms of noise insulation of the building envelope shall be a last resort and the final line of defence against adverse external noise.

### 8.1: Sound-conscious urban design concept

The concept of sound conscious urban design is emerging. Its value to and in spatial planning and urban design is recognised and discussed at length in various sections of the Mayor of London document “Sounder City, The Mayor’s Ambient Noise Strategy, Mayor of London, March 2004”.

Urban designers should not just abate or mitigate noise, as a negative afterthought, but work consciously with sound as a positive element of good design. It is acknowledged that sound quality can contribute to defining place.

Action to influence ‘design for noise’ has tended to focus either on overall policy guidelines (e.g. Planning Policy Guidance Note No. 24) or the detail of building acoustics and noise control standards or specifications.

The Mayor’s Ambient Noise Strategy provides some useful advice on Sound-conscious urban design and the following practical noise reduction issues / measures are viewed as relevant to design in SCDC:

- **Façade continuity and 'quiet side'** - Buildings can be designed not only to protect their occupants, but to screen other areas from noise. High density development following traditional street blocks can reduce noise on the 'quiet side' by 10 to 20 dB(A).

- **Spaces between buildings** - Although enclosed spaces can often be tranquil, tightly-enclosed spaces can also 'trap' sound, including from poorly designed, installed or maintained ventilation plant, waste facilities, vehicle manoeuvring, neighbours, or aircraft. The balance of advantage between contained and more open layouts will depend on the relative contributions of different noise sources. In noisy areas, acoustic absorbency within 'courtyard' areas should normally be maximised, especially from dense vegetation and soft ground. Rooftop planting may be useful on lower level roofs. In quieter spaces, sound reflection can help people sense where they are. Paving design should consider noise not just from road vehicles, but trolleys, and, particularly over or near bedrooms, footfall. 'Solar pergolas' with photovoltaic panels, could modify sound propagation.

- **Side streets and 'side on' buildings** - Orienting blocks, terraces or streets of housing at right angles rather than parallel to a road or railway reduces façade noise levels, but means that both sides of a building can be equally noisy, and noise can spread. Staggering of units in terraces, projecting service cores, wing walls or fins, and other 'self-protecting' design can screen façades and openings. For side streets, diffusing façades, and cantilevered or bridging 'gateway' development (with absorptive soffits) can reduce propagation. Architectural noise barriers, transparent screens, or end-of-row infill development could be considered.

- **Façade reflectivity** - Multiple reflection between opposing, acoustically hard building surfaces increases noise levels, particularly in 'urban street canyons'. Façades at the wrong angle can reflect sound into quiet areas, as can curved and outward sloping buildings. Sound absorbing panels, deep acoustic profiling, 'absorptive banners' and other elements should be considered. A wider choice of acoustically absorptive materials needs to be developed, ideally using recycled materials. In compact urban environments, making barrier surfaces more absorptive is generally preferable to inclining them to reflect sound upwards.

- **Noise and height** - High buildings, with less shielding from other buildings, may receive noise from a wider area. Stepping-back of upper floors, canopies and other projections can offer screening. Acoustic balconies, with high imperforate parapets and absorptive linings to the soffit of any projection above, can reduce noise at a window by 5 dB. The predictive capabilities of noise models need to be improved, for both towers and 'urban canyons'.

- **Dual façades and window design** - Conservation policies will need to be balanced with the noise and energy benefits of innovative design, including

design of window surrounds to offer screening, secondary glazed façades and photovoltaic exterior secondary glazing.

- **Shallow floor plates, ventilation and cooling** - Growing demand for air handling, cooling and other plant can increase the risk of 'a creeping ambient noise level'. Much recent prime UK office development has been air-conditioned, with large floorplates. Sealed environments are suited to the noisiest locations, but plant can create noise. More continental European-style shallower floorplates should be sought, with greater use of natural ventilation. Such development is well-suited to mixed-use areas, avoiding the risk of noise from air-conditioning plant. Noise from mechanical plant can also be reduced with 'borehole cooling'. Any fans and vents on the 'quiet side' should be well-silenced and/or screened, with regular maintenance. Visually attractive ways of incorporating vents on street frontages should be considered, such as in 'banner' light features. Where more sustainable alternatives cannot be achieved, effective ways need to be secured to control noise from mechanical plant throughout operational life. This applies especially to growing numbers of small 'bolt-on' cooling or air handling units in dense, mixed use areas.

- **Vehicle access and parking** - Car free developments could reduce the need for hard paving, as well as noise sources. Waste storage and collection should be located away and/or screened from noise sensitive uses. Car parking and service areas should be screened, enclosed, or buffered with less sensitive uses. Enclosed car parks and bays should be designed to minimise sound reverberation and breakout. Lockable gates to residential courtyards at night can reduce disturbance from vehicles and on-street revellers, especially in mixed use areas, while avoiding the sort of exclusion associated with the 24- hour gated enclave.

- **Maintenance and cleaning** -Quiet equipment and processes should be specified (e.g. raking, sweeping and local composting, rather than leaf blowing and carting away).

- **Features of soundscape interest** - Many sounds may be positive or negative depending on context (e.g. active water, wind in trees or rushes, loose surfaces, gratings, reverberant spaces).

- **Balancing needs** - Passive solar design, in which homes need to face roughly south, may make it difficult to create a 'quiet side'. Noise screening could increase shading. More linking of buildings to reduce noise propagation may mean accepting some change in local character, although visual monotony can be avoided by set-backs and many other design features. Very long or deep 'urban canyons' may inhibit dispersion of air pollutants. The balance between noise reduction and other needs should be struck on a place-specific basis, taking account of potential changes in noise sources, and in competing needs, over the lifetime of the development.

**Reference / Source:** "Sounder City, The Mayor's Ambient Noise Strategy, Mayor of London, March 2004".

Applicants should be aware that the granting of planning permission and compliance with any conditions attached, will not necessarily protect them from legal action brought by either a Local Authority or private citizens under Part III of the Environment Protection Act 1990, or subsequent legislation, for creating a statutory nuisance from noise, dust fumes or smell.

**8.2: Ventilation requirements and Noise Insulation of Noise Sensitive Premises:**

Ideally, SCDC internal levels should be achieved even when future occupiers open windows. However on some potentially noisy sites, windows may need to be double glazed or fitted with secondary glazed units and tightly closed.

The Building Regulations Approved Document F 2006 (ADF 2006): Ventilation requires that habitable rooms in dwellings have background ventilation, based on the number of bedrooms or total internal floor area, and purge (formerly rapid) ventilation in each habitable room of a minimum of 4 air changes per hour per room directly to the outside.

If achieving internal noise levels rely on keeping openable windows closed, then careful consideration will need to be given to ensure rapid ventilation (purging) and cooling, for example during hot summer days / nights, can be provided by alternative means, without the need to open external openings.

This is acknowledged by the ADF 2006, which states that in noisy areas it may be appropriate to use either sound-attenuating background ventilators or mechanical ventilations solutions, depending on noise level and any planning conditions.

Opening windows can compromise the noise insulation standard / scheme required. This sometimes means that certain traditional building elements can no longer be relied on as a means of rapid ventilation such as windows, patio door and or Juliet Balconies. Simple trickle vents and or acoustically treated airbricks that provide only background ventilation may not be acceptable.

Passive stack ventilation and or mechanical forced ventilation units, incorporating fans are available for insertion in external walls may be required. However, ducted systems with intakes on the quiet side of the building may be required in very noisy situations, or where appearance rules out through-the-wall fans.

All schemes for ventilation shall comply with Approved document F Building Regulations (refer to BRE Information Paper IP4/99:"Ventilators: Ventilation and Acoustic Effectiveness" (Oct 1999) and should conforms to the acoustic requirements of the Noise Insulation Regulations 1975 .

## 9.0: Vibration

Significant vibration within SCDC (apart from temporary construction works) is only likely to be generated by surface trains running on railway tracks throughout the district. However there may be some vibration associated with the Cambridgeshire Guided Bus line. Ideally, track form and wheel/rail interface would be in the optimum condition to minimise vibration generation. Road traffic is unlikely to generate any significant vibration where the road-wearing surface is in reasonable repair. A vibration assessment should be undertaken where surface railways, are within 75m to 100m of a proposed development site. The Pollution Team within Housing & Environmental Services can advise and give guidance on particular sites.

Any site affected by vibration will require an assessment of the impacts of that vibration. Vibration acceleration ($m/sec^2$rms) shall be measured at foundation level in each of the three orthogonal directions x, y and z.

The Vibration Dose Values (VDV) should be calculated and assessed from the measured acceleration levels in accordance with BS6472-1:2008 : Guide to evaluation of human exposure to vibration in buildings part 1 : Vibration sources other than blasting (revised). For residential development, the VDV ($m/s^{1.75}$) should not exceed those in Table , abstracted from Table 4 of BS 6472-1:2008(revised).

**Table 4: Residential Development Vibration Dose Values (m/sec 1.75)**

| 07:00 – 23:00<br>16 hour day | 23:00-07:00<br>8 hour night |
|---|---|
| 0.2 to 0.4 | 0.1 to 0.2 |
| Note: For offices and workshops, multiplying factors of 2 and 4 respectively should be applied to the above vibration dose value ranges for a 16 h day. | |

The VDVs given in Table 4 are for in-property levels of exposure. Measurements made on an undeveloped site may not allow for transfer functions from the ground into foundations, normally taken as a multiplication factor of 0.5. In addition, amplification of vertical vibration magnitudes in suspended floors, due to resonance, may increase vertical vibration magnitude by a factor of 2 but this will be dependant on type of floor construction, span and depth. Where a site has existing buildings, vibration should, if possible, be measured on the foundations, ground beams or pile caps. Measurements made within existing buildings need to be corrected to derive VDV which would apply to the new buildings on the same site.

Human response to vibration varies with the duration of exposure, the magnitude of the acceleration and the frequency. Where VDV exceed those of Table 2 proposals shall be submitted to mitigate vibration to acceptable levels such as suitable vibration resilient foundation design.

Re-radiated noise, as a result of vibration from adjacent railways and other sources, should be given careful consideration within habitable residential rooms.

All building services plant and equipment such as air conditioning and air handling plant can generate vibration, which in turn can re-radiate as noise within buildings. All services and equipment plant shall be supported on proprietary anti-vibration mounts.

The content of a vibration assessment report shall follow the format suggested in Annex A (informative) of BS 6472-1:2008.

## 10.0: Sound Insulation: Inside and Between Residential Dwellings

The requirements of Approved Document E of the Building Regulations are deemed adequate for the sound insulation transmission loss between floors and walls of adjoining residential dwellings. No planning conditions are necessary as they are part of Building Regulations. A defect in workmanship during the installation of sound insulation systems is primarily the cause of complaints both in conversions and new builds from subsequent occupiers. The modern fashion for hard floor surface finishes such as hardwood floors make the necessity for adequate impact sound insulation in floors in apartment blocks essential. The requirements of Approved Document E with regard to impact sound insulation apply to the constructed floor without carpet and underlay.

Adequate site control of the installation of sound insulation systems is important. Ideally specialist operatives approved by the system supplier/designer would undertake installation.

## 11.0: Sound Insulation between Commercial/Residential Dwellings

The requirements of Approved Document E of the Building Regulations specify sound insulation transmission loss between the floors and walls of adjoining dwellings. The requirements of Approved Document E may not be adequate where commercial use adjoins or attaches to residential use.

If an application proposes a situation where residential use and commercial use will share a separating floor or wall an assessment of the required sound insulation performance of the floor or wall, should be submitted together with construction details of any proposed sound insulation system.

## 12.0: Noise from Air Fields

South Cambridgeshire has a long association with flying. Consequently there are a number of established aerodromes and smaller airfields in the District. The Council acknowledges that aviation contributes to national, regional and local economies and a number of industries established on local airfields are important in that context. At the same time airfields can raise difficult environmental issues. These need careful

consideration to strike the right balance between a number of different interests that can be in conflict. In particular, noise resulting from flying activities has been a source of complaints in the past and is still a very sensitive issue in some areas of the District.

There are two larger airfields in the District. Firstly, on the eastern edge of the City, Cambridge Airport (Marshall's) lies predominantly within South Cambridgeshire. The airport is a base for general aviation including charter flights to Europe, business and recreational flying, flying instruction and aircraft repair. As a prestigious firm bidding for major contracts, Marshall's is a significant local employer. The District Council is represented on the Cambridge Airport Liaison Consultative Committee. Secondly, Duxford, to the south of Cambridge, forms part of the Imperial War Museum and is a site of national and international importance, depicting the history of 20th century conflict. The Council is represented on the Duxford Airfield Management Liaison Committee.

There are a further seven smaller aerodromes and airfields in South Cambridgeshire. Three of these are licensed by the Civil Aviation Authority (Bourn; Fowlmere; and Little Gransden), while four are unlicensed airfields/airstrips (Gransden Lodge Gliding Site; Little Shelford; Top Farm, Croydon; and Willingham).

Some of these sites operate within strict specific limits imposed by planning permissions. Others have established use rights affording operators with various degrees of potential scope for increasing flying or other associated activities without incurring any need for additional on-site infrastructure in the form of buildings, engineering operations or material changes of use.

In view of the variety of airfields within the District, the range of operating and planning regimes under which they are administered, and the differences in their local geographical circumstances and relationships, it is not possible to devise detailed prescriptive policies that can be applied to all sites with equal precision or fairness. **Policy TR6 "Aviation Related Development Proposals**" of the LDF is intended to provide a flexible framework within which any individual proposal can be considered in the light of all the particular local circumstances.

Most of the smaller airfields/airstrips operate on a small scale and are located in very rural, generally tranquil, areas at some distance from major elements of the transport infrastructure. The principal function of these facilities is, in the broadest sense, 'recreational'. The Council do not consider it appropriate that this situation should change. It is therefore unlikely that planning permissions will be granted for any activities that would have that effect.

**Assessment of Air Craft Noise Impact**

Aircraft noise will usually be assessed in terms of the daytime noise exposure index (LAeq, 16h) supplemented as appropriate by other considerations such as the maximum noise level of individual events. It may also be necessary to adopt

acceptability criteria for the noise exposure level appropriate to local circumstances, for example to account for public perception of increased annoyance where local background noise conditions are unusually low or where flying activities are already experienced from the use of other local airfields.

*PPG 24, Annex 3, Paragraph 7 states:*

Using forecast contours, it should be possible to determine approximately which areas are likely to fall within the different noise exposure categories. For small aerodromes local planning authorities **should not rely solely on Leq where this is based on less than about 30 movements a day**. Local planning authorities should also be aware that in some circumstances the public perceive general aircraft noise levels as more disturbing than similar levels around major airports.

To give a more representative indication of impact it is recommended that forecast aircraft noise contours for $L_{eq}$ levels, are generated using appropriate modeling software such a the Integrated Noise Model (INM) or the UK Civil Aircraft Noise Contour Model (ANCON) or similar. This would provide for a more comprehensive assessment and should be used to indicate the size of area and the likely number of residential premises / number of future residents who may be affected by aircraft noise.

Other factors relevant to a judgement as to whether or not a development would give rise to an unacceptable amount of noise could be (a) the type and weight of aircraft to be operated from the airfield, (b) the total number of proposed movements in and out of the airfield, (c) the type of aircraft activities proposed including any touch and go movements or circuit training, (d) the proposed total number of daily movements, and (e) the proposed hours of operation. Where necessary or appropriate, conditions may be imposed to cover these and any other essential matters. In certain cases such conditions may allow for a limited number of exceptions above the imposed restriction.

It will be helpful in the determination of planning applications if the promoters of any proposal are able to demonstrate the existence (or proposed existence) of a local liaison committee comprising representatives of a suitable range of interested local bodies. The completion of a Section 106 planning obligation may be an appropriate way of demonstrating this commitment.

Certain types of flying activity may result in a different level or type of potential impact from that caused by conventional modern aeroplanes taking part in 'normal' flights. Such disturbance may often (but not always) be more severe. In all such cases, particularly those quoted as examples in the policy, the Council will require applicants to state whether their proposals are intended to provide for these kinds of activities and, if so, to describe their intended scale. In appropriate cases the degree of any nuisance arising from proposed flying activities may be assessed (a) by the use of on-site demonstrations or (b) by the imposition of a temporary permission to give a

reasonable 'trial run' during which a careful programme of monitoring will be undertaken.

## 13.0 Design and Specification for Noise Barriers

Barriers may be made of many different materials ranging from brick, metal, earth and timber etc. Mainland Europe, in contrast to the UK, has developed over this past 30 years, a substantial market for high performance and ascetic durable noise barriers. There has been a much stronger approach than in the UK to find truly environmental solutions to noise.

Until recently in the UK, barriers were mostly constructed of timber and there was an assumption that basic timber fences could be used as adequate barriers against traffic and other noise sources, for example 19mm close boarded fences. Such simple designs have been proved to be mostly ineffective, particularly where noise with significant low frequency content is present, due to inadequate account being taken of the density of different species of timber, leading to selection of timbers which warped, with gaps widening under hot weather conditions. In addition there was a lack of in-adequate testing of the timber barrier sections before they were erected.

The regulations have been tightened up requiring correct specifications for noise barriers, based on certified laboratory tested acoustic performance, to ensure that effective long lasting barriers are built, that significantly reduce noise levels and public complaint.

The following guidance must be achieved, where barriers need to be erected to mitigate against noise transmission.

Appearance and life expectancy of proposed barrier

• Highways Agency, HA 65/94, A Design Guide for Environmental Barriers – guidance on installation with regard to the appearance of the noise barrier in the environment.
• Highways Agency, HA 66/95, Environmental Barriers, Technical Requirements – requirement to build barriers for 20 years low maintenance and a 40 year operational life.

Testing of the airborne sound insulation of the proposed barrier and also sound absorptive performance where appropriate

BSEN 1793 Parts 1, 2 and 3
• Test to be carried out in a nationally accredited laboratory with a sample panel of the proposed barrier, mounted in the window between two adjoining reverberant rooms, the sample to include the post and the exact fixings and sealants to be used on site.
• Detail report to be submitted on the test conditions, fixings, component sizes and densities.
• Not less than category B insulation to be achieved.
• Not less than category A3 absorption to be achieved and A4 where the barrier is high and in a reverberant location.

## 14.0 Demolition / Construction Noise and Vibration

In some circumstances the disturbance from construction activity on development sites can cause nuisance to nearby residents. It is not possible to provide detailed guidance for determining whether or not noise will constitute a problem in a particular situation. However a number of factors are likely to affect considerations of the acceptability of site noise and the degree of control necessary. These include site location, existing ambient noise levels, the duration of site operations, hours of work, the attitude and competence of the site operator and the particular characteristics of the noise itself.

Where the District Council considers that it is important to restrict construction activity on a particular site in order to minimise disturbance, noise and pollution from that site, the District Council, on the advice of the Environmental Protection Section of Health & Environmental Services, will impose a condition on the planning consent which limits the hours of working. These will be:

08.00 - 17.30 Mondays to Fridays
08.00 - 13.00 Saturdays
and not at all on Sundays or Bank Holidays.

The District Council will apply this condition where the problems of noise construction on a site are anticipated to be so severe that significant disturbance is likely to nearby residents.

For larger development a Construction Management Plan may be required by condition.

Construction should be carried out in accordance with the following guidance / standards which advocate the use ofbest practical means to mitigate noise impoact:

- BS 5228: 2009: Code of practice for noise and vibration control on construction and open sites – Part 1 and 2
- BS 5228- Part 2:2009: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration

The Building Research Establishment has published 5 pollution control guides on the control of particles, vapour and noise from construction sites. These advise on pre-project planning, site preparation, haulage, storage of materials and site operations.

The sections are as follows:

- Part 1: pre-project planning and effective management. ISBN1 86081 6541
- Part 2: site preparation, demolition, earthworks and landscaping. ISBN 1 86081 655X
- Part 3: haulage routes, vehicles and plant. ISBN 1 86081 6568
- Part 4: materials handling, storage, stockpiles, spillage and disposal. ISBN 1 86081 6576

- Part 5: fabrication processes and internal and external finishes ISBN 1 86081 6584

**Current Noise Standards & References**

1. Draft Guidelines for Noise Impact Assessment. Institute of Acoustics and Institute of Environmental Management and Assessment. 2002.
2. British Standard BS 5228: 2009: Code of practice for noise and vibration control on construction and open sites – Part 1 and 2
3. British Standard BS 5228- Part 2:2009: Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration
4. BS 7445: 2003 Part 1 and 1991 Part 2 and 3 'Description and measurement of environmental noise'.
5. Update of Noise Database for Prediction of Noise on Construction and Open Sites.Department for Environment, Food and Rural Affairs. 2005.
6. Control of Pollution Act – Part III Noise. HMSO.1974.
7. British Standard BS 6472 Guide to Evaluation of Human Exposure to Vibration in Buildings. Part 1: Vibration sources other than Blasting. 2008.
8. Design Manual for Roads and Bridges Volume 11 Section 3 Part 7 HA 213/08 Noise and Vibration. 2008.
9. Planning Policy Guidance PPG24: Planning and Noise. Department of the Environment, Transport and the Regions. 1994.
10. Noise Insulation Regulations. Statutory Intruments No. 1763. Building and Buildings. HMSO. ISBN 0 11 051763. 1975.
11. International Standard IEC 61672 Electracoustics – Sound level meters. 2003.
12. International Standard IEC 60942 Electracoustics – Sound calibrators. 2003.
13. World Health Organisation (2000) 'Guidelines for Community Noise'
14. The Building Regulations 2000. 'The Building Regulations. Resistance to the passage of sound'. Approved Document E (2003)
15. Department for Education and Science, 'Building Bulletin (BB) 93'.
16. Department of Transport /Welsh Office (1988) 'Calculation of Road Traffic Noise (CRTN)'
17. Institute of Acoustics / Institute of Environmental Management and Assessment (2005)'Guidelines on Noise Impact Assessment'.
18. Noise and Vibration Control for HCVA, Guide B5. CIBSE. 2002 (now part of 'Heating, Ventilating, Air Conditioning and Refrigeration Guide B. CIBSE. 2005).
19. Noise and Vibration Control – Guide B5. CIBSE. 2002.
20. Sound Control of Homes. Building Research Association and Construction Industry Research Association (BRE/CIRIA). 1993.
21. Guidelines for Environmental Assessment of Road Traffic: 2002 Institute of Acoustics / Institute of Environmental Management and Assessment (IOA/IEMA)

## Further Information / Contacts

- SCDC Health and Environmental Services 03450 450 063
- Association of Noise Consultants Website; www.association-of-noise-consultants.co.uk
- http://www.nsca.org.uk/pages/topics_and_issues/noise.cfm
- Institute of Acoustics, 77A St Peter's Street, St Albans, Hertfordshire, AL1 3BN Tel: 01727 848195 http://www.ioa.org.uk/
- The Chartered Institution of Building Services Engineers, 222 Balham High Road, Balham London SW12 9BS, Tel 020 8675 5211 Fax 020 8675 5449 http://www.cibse.org/
- BSRIA Ltd, Old Bracknell Lane West, Bracknell, Berkshire, RG12 7AH, Tel: 01344 465600 Fax: 01344 465626, Email: bsria@bsria.co.uk
- National Society for Clean Air and Environmental Protection - Construction site noise **(external)** http://www.nsca.org.uk/pages/environment_facts/construction_site_noise.cfm

## Policy & Plans

### National Policy

PPG 24 'Planning and Noise': which sets out the Government's policies on noise (and vibration) related planning issues.

- PPS 1 Delivering Sustainable Development

Maintain and improve the local environment and mitigate effects of declining environmental quality

### Regional Policy

SCDC Local Development Framework Development Control Policies (DPD) July 2007 relevant policies:

- **Policy DP/1 (1):**

**Consistent with principles of sustainable development**
Limit adverse impacts on environment

l. Ensure no unacceptable adverse impact on land, air and water

- **Policy DP/3: Development Criteria**

Para 2.Planning Permission will not be granted where the proposed development would have an unacceptable adverse impact:
n. from undue environmental disturbance such as noise, lighting, vibration, odour, noxious emissions or dust

- **Policy DP/6: Construction Methods**

Para 2.Haul roads located, designed and landscaped in such a way to avoid any noise, smell, dust…., or other adverse impacts on existing residents and businesses…
3. Storage compounds, plant or machinery must be located, designed and used to avoid noise, smell, dust, …

- **7. Natural Environment Objectives:**

NE/e: To protect and improve ambient noise environment

NE / 15 (1) Noise Pollution
NE/15 (2): Consideration will be given to the increase in road traffic that may arise due to development and conditions or Section 106 agreements may be used to minimise such noise.

- **Policy TR/3: Mitigating travel Impact:**

new developments to mitigate their travel impact, including their environmental impact, such as noise, pollution and impact on amenity and health

- **Policy TR/6 Aviation-Related Development Proposals**

1. In assessing any planning applications for new airfields or flying sites, or for the expansion of any existing airfields or flying sites, the District Council will take account of the following factors:
a. The economic, employment or emergency services advantages likely to accrue to the area;
b. The likely noise impact of the proposal on local residents and the users / occupiers of any other noise-sensitive buildings in the area, including (where relevant) any cumulative impacts of flying in the area;
c. The accessibility of the site in relation to the transport infrastructure;
d. The effect of the proposal on nature conservation interests;
e. The impact of the proposal on the landscape, including the effects of any lighting that would form a necessary part of the scheme;
f. Any resulting increase in the range of recreation provision;
g. Any safety issues arising from the proposal, including the safety of users of public rights of way close to, or crossing, the site;
h. The effect of the proposal on sites with potential for renewable energy generation.

2. Aircraft noise will usually be assessed in terms of the daytime noise exposure index (LAeq, 16h) supplemented as appropriate by other considerations such as the maximum noise level of individual events.

3. In assessing the impact of noise, consideration will be given, where relevant, to the types of flying activities that are proposed at the site (or are likely to be associated with it), e.g. aerobatics, aero-towing, ballooning, flying training (including ab-initio flights), helicopters, historic aircraft, parachuting, and special event days. Applicants will be required to state what types of flying activities are proposed, and on what scale.

4. Other factors relevant to a judgement as to whether or not a development would give rise to an unacceptable amount of noise could be:
i. The type and weight of aircraft to be operated from the airfield;
j. The total number of proposed movements in and out of the airfield;
k. The type of aircraft activities proposed including any touchand-go movements or circuit training;
l. The proposed total number of daily movements;
l. The proposed hours of operation.

5. Where necessary or appropriate, conditions may be imposed to cover these and any other essential matters. In certain cases such conditions may allow for a limited number of exceptions above the imposed restriction.

6. In all cases the Council will require applicants to state whether their proposals are intended to provide for these kinds of activities and, if so, to describe their intended scale. In appropriate cases the degree of any nuisance arising from proposed flying activities may be assessed:

n. By the use of on-site demonstrations;
o. By the imposition of a temporary permission to give a reasonable ‘trial run’ during which a careful programme of monitoring will be undertaken.

7. In the case of small airfields / airstrips in tranquil rural areas a special case would have to be demonstrated to justify the granting of planning permission for development that would generate activities of a type (or on a scale) that would be materially at odds with a primarily recreational function and low level of activity.

8. Where planning permission is granted conditions may be imposed in appropriate circumstances to restrict matters such as:
p. The total number of take-offs and / or touch-and-go movements (normally on a daily maximum basis);
q. The types or weights of aircraft to be operated; and
r. The hours of operation of the site.

# APPENDIX 7

# LIGHT POLLUTION

In a predominantly rural environment such as South Cambridgeshire, the impact of lighting associated with development can have an adverse impact upon both the surrounding landscape and residents of surrounding properties. In certain circumstances lighting is critical in terms of public safety and security but in others, the amount of light emitted only serves to create a form of pollution either through windows of bedrooms. In such cases, the District Council will seek to reduce the amount of pollution, particularly in the context of new development where lighting is required for the road system or security lighting for remote developments.

Therefore it is necessary to try to find a balance between the need for lighting and the negative implications associated with it. Lighting in itself may not need planning permission but the Council will use planning powers where appropriate to manage the effects of lighting to achieve the objective of this part of the SPD which is to reduce excessive, intrusive and unnecessary lighting in both rural and urban areas.

Problems of glare, (the uncomfortable brightness of a light source when viewed against a dark background), and light trespass, (the spilling of light beyond the boundary of the property on which the source is located), are other forms of light pollution. Such light pollution is a waste of electricity and therefore increases energy consumption and emissions.

Designers are advised to have regard to the type of location in designing lighting proposals and devising techniques for limiting light pollution and its impacts.

### Planning Policy

PPS 23 Planning And Pollution identifies lighting as both a consideration in the preparation of any development plan documents and as a material consideration in deciding if planning applications are given planning permission or not. A third Annex on ‘planning and light pollution’ will be produced in due course.

East of England Plan May 2008

**POLICY ENV7: Quality in the Built Environment**
Local Development Documents should require new development to be of high quality which complements the distinctive character and best qualities of the local area and promotes urban renaissance and regeneration.

New development should reduce pollution, including emissions, noise and light pollution; and

## SOUTH CAMBRIDGESHIRE DEVELOPMENT CONTROL POLICIES DPD, JULY 2007

### POLICY DP/3 Development Criteria

2. Planning permission will not be granted where the proposed development would have an unacceptable adverse impact:

n. From undue environmental disturbance such as noise, lighting, vibration, odour, noxious emissions or dust;

### LIGHTING POLICY NE/14 Lighting Proposals

1. Development proposals which include external lighting should ensure that:

a. The proposed lighting scheme is the minimum required for reasons of public safety and security;
b. There is no light spillage above the horizontal;
c. There is no unacceptable adverse impact on neighbouring or nearby properties or on the surrounding countryside;
d. There is no dazzling or distraction to road users including cyclists, equestrians and pedestrians;
e. Road and footway lighting meets the District and County Councils' adopted standards.

Conditions may be attached to lighting schemes. These might include the following:

- Specify the colour and height of lighting columns/brackets – to ensure harmony with its setting;
- Limit the use of lighting schemes to identified users and specify the type of screening vegetation – to ensure minimal impact on neighbouring amenities;
- Specify the lighting position and angle of illumination – to reduce glare;
- Specify the type of lighting – to reduce sky glow and guarantee harmony with its setting;
- Limit hours of operation and lighting levels - to manage both energy consumption, light trespass and the duration of lighting impacts and associated activities;
- Review the impacts after installation – to ensure that both the human and ecological impacts are minimal;
- Review future maintenance and post installation checks – to ensure that all lighting corresponds to the original design and approval.
- Submission of details of any external lighting of the site such as street lighting, floodlighting, security lighting including layout plan with beam orientation, full isolux contour maps and a schedule of equipment in the design (luminaire type, mounting height, aiming angles and luminaire profiles, angle of glare) for approval.

### Additional Guidance on Lighting should be referenced as follows:

- Institute of Lighting Engineers (2005) 'Guidance Notes for the Reduction of Obtrusive Light'
- DEFRA (2001) 'Lighting in the Countryside: Towards Good Practice'

- BS 5489 (2003) 'Code of Practice for the Design of Road Lighting – Part 1: Lighting of Roads and Public Amenity Areas'
- BS EN 13201 (2003) Road Lighting – Part 2: Performance Requirements
- Light Pollution Leaflet, Environmental Protection UK downloadable from http://www.environmental-protection.org.uk/assets/library/documents/Light_Pollution_booklet_Jan08.pdf

**Technical lighting standards**

The following bodies have published a number of guides containing standards relevant to lighting:

- The British Standards Institution (BSI) www.bsi-global.com;
- The Chartered Institution of Building Services Engineers (CIBSE) www.cibse.org;
- The International Commission on Illumination (CIE) www.cie.co.at;
- The Department for Transport (DFT) www.dft.gov.uk;
- The European Committee for Standardisation www.cenorm.be; and;
- The Institute of Lighting Engineers (ILE) www.ile.org.uk

# APPENDIX 8

# DESIGN CRITERIA FOR NEW AND ALTERED HIGH-RISK FOOD PREMISES

1.0 Introduction

1.1 The principle legislation dealing with the design and construction of food premises is the Food Safety Act 1990 and the Food Safety (General Food Hygiene) Regulations 1995.

The regulations contain specific requirements for the layout, design and construction of premises where open food is handled or sold. Also detailed requirements are, laid down for floor, wall and ceiling surfaces together with numbers of facilities such as sinks and wash hand basins and the installation of equipment.

'The Industry Guide to Good Hygiene Practice' published by HMSO contains very useful advice and guidance to caterers to enable them to comply with the requirements of the 1995 Regulations.

New materials and construction techniques have been developed which help to ensure that food premises are easily cleaned and do not encourage infestation by rodents and insects or the growth of disease producing bacteria.

1.2 Standards

1.2.1 Three principle criteria have been referred to throughout this document:

Legal requirement This quotes the actual provision of the legislation and the Chapters contained in the Regulations.

Guide to Compliance These standards are contained in the Industry Guide document, are legally enforceable and are therefore the minimum standard to be achieved in any food premises.

Advice on Good Practice These standards are also contained in the Industry Guide and indicate the materials, practices and construction techniques currently available and known to provide good standards of catering practice.

1.3 Application of the Standard

1.3.1. These standards are applicable to all premises where high-risk open food is stored, prepared or sold.

1.3.2 High-risk open foods are either ready to eat foods, or those which have already gone through most, if not all, of their preparation and cooking stages. There would be a 'high risk' of food poisoning if they were contaminated by bacteria or allowed to

deteriorate because there are no further steps to control the hazard from foods prior to them being consumed.

Examples include:

- Cooked meats and fish, pies and pates;
- Soft cheeses, cream, milk and dairy based foods, cooked rice, pasta and vegetables, prepared salads.
- Any food containing the above as ingredients

1.4 Standards of Workmanship

'These criteria are intended to apply to new premises or premises where refitting or major alteration is carried out. The suitability of the premises after this work will depend on the ability of the builder to work to a professional standard.

1.5 Size, Design, Construction & Layout

These criteria make no mention of any standard for the size of food rooms or the space to be devoted to a particular operation. It has not been possible to give definitive criteria for these aspects and therefore proprietors of any new food premises or premises where work is to be carried out must submit a scaled sketch plan showing the exact layout of all fixtures and fittings, detailing areas in which various processes are to be carried out and giving details of surface finishes. This will enable the Environmental Health Officer dealing with the premises to make recommendations on the suitability of the proposed layout and space.

1.6 Legal Requirement

In general terms the layout, design and construction and size of food premises shall:

(a) Permit adequate cleaning and/or disinfection.
(b) be such as to protect against the accumulation of dirt, contact with toxic materials, the shedding of particles into food and the formation of condensation or undesirable mould on surfaces;
(c) permit good food hygiene practices, including protection against cross contamination between and during operations by foodstuffs, equipment, materials, water, air supply or personnel and external sources of contamination such as pests; and
(d) provide, where necessary, suitable temperature conditions for the hygienic processing and storage of products.

1.7 Guide to Compliance

The main criterion is 'cleanability' and layout and design should allow for effective cleaning. Alternatively, equipment must be mobile to enable adequate cleaning and disinfection. The amount and type of cleaning needed, will be different for each area

of the premises and the uses to which the areas are put. The layout, design, construction and size of the premises must avoid the accumulation of dirt in places inaccessible to cleaning. High-level surfaces should avoid finishes that may lead to the shedding of particles such as flaking paintwork, plaster or fibres. Similarly, any growth of mould within the fabric of a building is undesirable, as is the presence of condensation.
Adequate space must be provided to allow high-risk foods to be stored, handled and prepared separately from foods that may contaminate them: e.g. raw foods. This is particularly necessary where both have to be stored, handled and prepared at the same time and/or in the same area.

1.8 Advice on Good Practice

It is good practice to avoid sharp corners at floor and wall junctions, the use of coving being recommended.
Good layout, operating systems and production flow should ensure that preparation and handling of high-risk foods are segregated.
In addition to proofing possible pest entry points, it is recommended to have secondary defences against pests which could include the use of baits (which should be positioned by a competent pest controller) and electric fly killers which should not be located directly above work surfaces.

The design should be such that refuse does not have to be taken through food rooms to the collection area.

1.9 Design

All food premises should be designed with a logical workflow pattern along the following lines:
(a) raw materials in;
(b) storage;
(c) preparation;
(d) cooking; and
(e) service or dispatch.

Good design will reduce the risk of cross contamination and will provide the basis for an efficient work pattern.

2. Requirements for Food Rooms

2.1 Floors

2.1.1 Legal Requirements

Floor surfaces must be durable, anti-slip, impervious to moisture, non-toxic and capable of being effectively cleaned, and where necessary, disinfected. Changes in floor levels should be avoided if possible. The junction of walls and floors must be

coved for ease of cleaning. The coving diameter should be sufficient to enable easy cleaning.

2.1.2 Guide to Compliance

Floors must be kept in a good state of repair that allows them to be kept clean. Frequent disinfection of floors in catering premises would not be essential if the floors were kept clean. Exceptions would apply to 'cook-chill' units where bacterial contamination would seriously jeopardize the safety of the product.

Assuming that they are properly installed, the following surfaces would comply:
_ Quarry, ceramic or vinyl tiles, preferably anti-slip;
_ Vinyl sheet safety flooring with welded seams (Altro etc);
_ Terrazzo, and
_ Cast in-situ resin flooring

2.1.3 Advice on Good Practice
It is good practice to disinfect all floors periodically but the frequency of disinfection will depend upon the type of food preparation carried out in that area or room.

2.1.4 Notes
(a) Terrazzo tiles are not recommended in wet areas because they are slippery.
(b) Domestic grade ceramic tiles should not be used.
(c) All floor drainage, including channels, gullies, and gratings, should be constructed of commercial quality stainless steel suitable for use in a food room. Gullies in food rooms must be trapped.
(d) Where floor drainage is provided the floor should be laid to a slight fall towards the drain.
(e) With modern 'wet-vac' machines, floor drainage will not always be necessary.

2.2 Walls

2.2.1 Legal Requirements

Walls should be constructed of a solid construction with smooth, impervious, non-absorbent, non-toxic and have durable finishes. They should be light in colour and capable of being repeatedly cleaned, and where necessary, disinfected without deterioration.

Wall surfaces immediately behind food preparation surfaces or equipment must be capable of being disinfected to reduce the risk of food contamination.

2.2.2 Guide to Compliance
Assuming proper installation the following surfaces would comply:

- Ceramic wall tiles with epoxy resin grouting;
- Aluminium sheeting;

- Stainless steel sheeting;
- PVC, GRP or polypropylene cladding, and
- Smooth painted plaster (except immediately above and behind areas subject to regular soiling or where there is a risk of physical impact or damage).

2.2.3 Advice on Good Practice
To assist cleaning, all junctions between walls and floors and vertical wall angles should be coved.

Wall surfaces should be to a minimum height of at least 1.8 metres above floor level.

Surfaces above this height should also be cleanable but might not need to be so durable against impact or physical damage.

2.2.4 Notes

(a) All sheet materials must be directly applied to solid wall surfaces and not leave any gaps that could allow infestation by pests.
(b) Where materials may be damaged, for example at projections or external corners, protection strips will be required.
(c) If painted plaster is used protection against damage should be given above work surfaces by tiling or sheeting.

2.3 Ceilings

2.3.1 Legal Requirements
Ceilings must be smooth, impervious and capable of being effectively cleaned and finished to prevent accumulation of dirt, reduce condensation, the growth of moulds and the shedding of particles

2.3.2 Guide to Compliance
The following surfaces would comply with the legal requirements:
(a) Painted plaster;
(b) Suspended ceilings with removable tiles (the tiles must be fire retardant), and
(c) Proprietary ceiling systems providing that they meet the general criteria.

2.3.3 Advice on Good Practice
Polystyrene or fibre tiles or panels would not be suitable in high humidity locations and the choice of ceiling design and materials may be important in reducing condensation.

2.3.4 Notes
(a) The assumption that absorbent ceilings should be used in order to absorb moisture and prevent condensation is misguided. If condensation is likely to occur then adequate mechanical ventilation must be used to remove moist air from the premises.

(b) The void above suspended ceilings must be accessible, cleanable and be kept free from pest infestations.

## 2.4. Doors

### 2.4.1 Legal Requirements

Doors and frames should be of simple design, smooth, impervious, close fitting, easy to clean, and where necessary, disinfect. External doors must be insect and vermin proof. Sight panels are required where doors open both ways.

Any doors used by staff that handles open food during work activity may be a source of contamination, especially if staff touch the doors with their hands. These doors as well as any door furniture, e.g. handles, must be capable of disinfection.

### 2.4.2. Guide to Compliance

The following doors and finishes would comply:

_ Painted wooden doors
_ Varnished wooden doors;
_ P.V.C. or rubber doors (for access by fork-lift trucks).

NOTE: Unsealed wood does NOT comply.

### 2.4.3 Advice on Good Practice

Washable, durable, flush doors or composite doors of solid construction without angles or mouldings would comply. Swing doors with kick or push plates are preferable to doors with handles.

If doors to food rooms are to be left open for ventilation purposes, then fine-mesh fly screens (mesh-size 10) should be fitted to prevent access by pests.

### 2.4.4. Notes

(a) Any Fire Authority requirements must be met.
(b) Protection (usually metal strips) will be required against damage by physical damage by feet, trolleys and vehicles.

## 2.5 Windows

### 2.5.1 Legal Requirements

Windows and their openings must be constructed to prevent the accumulation of dirt.

Those windows that can be opened to the outside environment must where necessary be fitted with insect proof screens which can be removed for cleaning.

Where open windows would result in contamination of foodstuffs they must remain closed and fixed during production.

2.5.2 Guide to Compliance
Windows must permit effective cleaning and prevent accumulations of dirt. This does not necessarily require sloping cills.

Windows must be screened if-
(a) they open directly in to food preparation areas;
(b) they are opened for ventilation during preparation, and
(c) screening is necessary to prevent risk of contamination or infestation - e.g. if opening on to refuse areas.

Where build up of dirt on screen presents a risk of food contamination the screens must be easily removable for cleaning.

2.5.3. Advice on Good Practice
Sloping cills help prevent the accumulations of dirt.
It is good practice to screen all openable windows in food preparation areas.

Recommended Materials
_ Aluminium
_ UPVC
_ Painted Wood

3. Services & Equipment

3.1 Ventilation

3.1.1 Legal Requirements
There must be suitable and sufficient means of natural or mechanical ventilation. Mechanical airflow from a contaminated area to a clean area must be avoided.

Ventilation systems must be so constructed as to enable filters and other parts requiring cleaning or replacement to be readily visible.

3.1.2 Guides to Compliance
Natural or mechanical ventilation must be provided to ensure that heat and/or humidity does not build up to levels that could compromise the safety of the food.

Air mechanically drawn in to 'clean' preparation rooms, producing ready to eat food must not be drawn from dirty areas such as waste storage areas or rooms used for 'dirty' processes such as pot washing.

Filters and other parts of the system must be accessible either directly or through access panels.

3.1.3 Advice on Good Practice

As a target, food room temperatures should be below 25$^{o}$C.

Natural ventilation in rooms where food is cooked will only be suitable in small premises and where there is low heat input in to the room from cooking appliances such as ovens, hobs and grills etc.

3.1.4 General Requirements

If you intend to carry out anything more than minimal cooking you should consult a ventilation engineer to design a system which will:-

(a) maintain kitchen air temperatures between 16□C and 22□C;
(b) control relative humidity, and
(c) achieve a ventilation rate of not less than 20 air changes per hour.

Mechanical airflow from a contaminated land area must be avoided.

The ventilation system should provide comfortable work conditions. At present the Offices, Shops and Railway Premises Act 1963 requires a minimum fresh air supply of 20 litres per metre square floor area per second for 'existing premises'.

From 1/1/1996 all premises will have to comply with Regulation 6 of the Workplace (Health, Safety & Welfare) Regulations 1992. Reference to The Approved Code of Practice for the Regulations published by HMSO is recommended.

3.1.5 Natural Ventilation is only acceptable where there is minimal cooking and heat generation.

Windows should be sited to allow through flow ventilation and preferably on a north-facing wall to reduce internal temperatures due to the heating effect of the sun.

Windows should allow incoming air to be as fresh as possible and preferably should not open directly on to busy roads, refuse areas or other unsuitable environments.

3.1.6 Mechanical Ventilation designed by a ventilation engineer will be required if you carry out moderate or large scale cooking.

The suitability of the make up air must be considered. All equipment which produce heat or water vapour should be ventilated by hoods connected to the extract ventilation system.

3.1.7 Notes

(a) Mechanical ventilation systems should be designed and fitted so as to avoid nuisance from noise and odours affecting occupiers of neighbouring premises.
(b) Your ventilation engineer should forward to this Authority, written confirmation that the proposed system can operate without causing such nuisance.

3.2 Lighting

The natural and artificial lighting must give good illumination to all parts of the premises.

3.2.1 Legal Requirements

Lighting must be of a sufficient level to permit safe food handling, effective cleaning and monitoring of cleaning standards.

3.2.2 Guide to Compliance

Light fittings should be designed to facilitate easy changing of tubes or bulbs and cleaning.

3.3 Washing Facilities for Food & Equipment

3.3.1 Food - Legal Requirement

Where appropriate, adequate provision must be made for the necessary washing of food. Every sink or other facility for the washing of food must have an adequate supply of hot and/or cold potable water as required, and be kept clean.

3.3.2 Guide to Compliance

Separate sinks must be provided for food preparation if the volume of preparation demands it.
In smaller kitchens one sink may suffice for both food and equipment washing, provided that both operations can be carried out without prejudicing food safety. It may be possible to 'time separate clean and dirty operations' such as washing salad vegetables and washing up crockery and cutlery with thorough cleaning of the sink in between these operations.

A supply of hot water is not essential if a sink is to be exclusively used for food washing only.

A single mixer tap is acceptable, or water supplied from a heating unit at a regulated temperature.

3.3.3 Advice on Good Practice

Signs above sinks designating the purpose that they are to be used for is good practice.

## 3.4 Equipment

### 3.4.1 Legal Requirement

Where necessary adequate facilities must be provided for the cleaning and disinfection of equipment and work tools.

These facilities must be constructed of materials resistant to corrosion and must be easy to clean and have adequate supply of hot and cold water.

### 3.4.2 Guide to Compliance

From time to time it will be necessary to clean all items of equipment depending on how they are used and the foods they are used for. Containers that hold only dry goods or powders will need cleaning only infrequently.

Equipment that comes in to contact with high-risk foods will require cleaning and disinfection more often.

Facilities must also be provided to clean and disinfect all tools, equipment, crockery, cutlery, glasses and serving dishes with which food comes in to direct contact.

Suitable equipment will include:

- sinks with detergents and disinfectants for manual equipment cleaning which are large enough to totally immerse the largest piece of equipment.
- sterilising sink;
- dishwashing machines, and
- hoses or other equipment for cleaning and disinfection of fixed equipment or structural surfaces.

Drying of equipment must be carried out without recontamination, for example from soiled cloths. Space for air-drying of all equipment is a suitable alternative.

All equipment must be of durable construction and resistant to corrosion, especially those items that will come in to contact with powerful cleaning chemicals.

Hot water via a single mixer tap is acceptable as is water supplied through a suitable heating unit at a regulated temperature.

### 3.4.3 Advice on Good Practice

Signs above sinks indicating the purpose they are to be used for is good practice. Facilities for draining and air-drying close to the area where washing up is undertaken.

Drying cloths will ideally be for single use only.

Where crockery, glassware and cutlery are washed by hand, a food approved detergent and disinfectant should be used.

Mechanical washing equipment should be used in larger operations with back up facilities available in case of breakdowns. An adjacent slop sink, or pre wash facility with a waste disposal unit is recommended for heavily soiled items.
Twin sinks with draining board are preferred for washing and rinsing to be carried out separately.

Cleaning chemicals brought in to food rooms should be handled, and placed, carefully to prevent any food contamination.

3.4.4 Notes

(a) The recommended temperature for washing-up is minimum of 55□C and for rinsing is minimum of 77□C.
(b) All waste pipes must be suitably trapped and discharge to a 'foul water' gully connected to the drainage system.
(c) Sink surrounds and fittings must be designed to allow for cleaning and to prevent moisture getting between the appliance and the wall surface.
(d) Domestic grade and inset sinks are not recommended in commercial operations.

3.5 Wash Hand Basins

3.5.1 Legal Requirements

An adequate number of wash hand basins must be available, suitably located and designated for cleaning hands.
Washbasins for cleaning hands must be provided with hot and cold running water, or appropriately mixed running water, materials for cleaning and for hygienic drying.

3.5.2 Guide to Compliance

The number of wash hand basins will depend up on the size of the business and the size and layout of the premises.

Washbasins must be located close to toilet facilities and at strategic places throughout the premises so that any worker has convenient access to them.
In ALL premises there must be at least ONE separate basin that is only used for the cleaning of hands.

A single mixer tap is acceptable or water supplied by an instant heating unit and a supply of soap or detergent must be provided for cleaning hands as well as facilities for hand drying which may include:

_ Disposable paper towels (with a collection bin adjacent);
_ Roller cabinet paper towels

_ Washable fabric ‘roller towels’ in cabinets, or
_ Warm air hand dryers.

3.5.3. Advice on Good Practice

Water at about 45□C through a single tap that is not hand operated is recommended.

Bactericidal detergent from a dispenser or antiseptic wipes (applied to clean hands) provide acceptable alternatives to bactericidal soaps.

Any towel of which the same part can be used more than once is not recommended.

Hot air dryers can be provided but they tend not to be used effectively nor efficiently.

Signs designating 'HAND WASH BASINS' are recommended.

Where nailbrushes are provided they must be kept clean.

3.6 Toilets

3.6.1 Legal Requirements

An adequate number of flush lavatories must be available and connected to an effective drainage system.

Lavatories must not lead directly in to rooms in which food is handled.
All sanitary conveniences within food premises must be provided with adequate natural or mechanical ventilation.

3.6.2 Guide to Compliance

Toilets must be provided on the basis contained in the Workplace (Health, Safety & Welfare) Regulations 1992. The minimum requirement is one WC for 15 employees of each sex OR one WC for every 5 employees of mixed sex.

Toilets must be connected through an effective trap to a 'foul' drainage system.

Toilets (either WCs or urinals) must not open directly in to a food room.
Toilets must have either natural or mechanical ventilation to prevent (as far as is possible) aerosols and offending odours from reaching food rooms.

3.6.3 Advice on Good Practice

There should be an intervening ventilated space between toilet facilities and food rooms and food should not be stored in those spaces, nor in toilet compartments.

Mechanical ventilation systems should discharge away from food rooms.

## 3.7 Drainage

### 3.7.1 Legal Requirements

Drainage facilities must be adequate for the purpose intended: they must be designed and constructed to avoid the risk of contamination of foodstuffs.

### 3.7.2 Guide to Compliance

Drains must have sufficient fall to allow for solid and liquid wastes to flow away. All appliances connected to the drainage system must be provided with effective traps. Inspection points must be available, but they must be adequately sealed.

### 3.7.3 Advice on Good Practice

The direction of flow should be away from 'clean' to 'dirty' areas. Toilets should feed in to the drainage system after the kitchen drains and there should be adequate traps to all appliances.

If open floor drains are provided, grids should be easily removable for cleaning purposes.

## 3.8 Changing Facilities

### 3.8.1 Legal Requirements

Adequate changing facilities for personnel must be provided where necessary.

### 3.8.2 Guide to Compliance

Provision must be made to allow food handlers to change and to store their street clothes and personal effects away from open foods.

Depending up on the size of the operation and numbers of staff a changing area away from foods and with lockable secure cupboards may be adequate.

### 3.8.3 Advice on Good Practice

Where staff wear protective clothing, separate changing facilities and secure storage for personal effects should be provided.

## 3.9 Equipment Installation

### 3.9.1 Legal Requirement

All articles, fittings and equipment with which food comes in to contact shall be installed in such a manner as to allow adequate cleaning of the surrounding area.

### 3.9.2 Guide to Compliance

The criterion is 'cleanability' and installation should allow access for effective cleaning. Alternatively, equipment must be mobile to enable adequate cleaning and disinfection. The amount and type of cleaning will relate to the area of the premises and the use to which it is put.

3.9.3 Advice on Good Practice

Heavy equipment should NOT be fixed in a place in such a way that restricts access for cleaning and service connections should not restrict mobility. Flexible connections to electricity, gas, water supply and drainage are possible and should be provided

# APPENDIX 9

# HISTORIC BUILDINGS & BUILDING REGULATIONS

Although not exhaustive, the specific parts of the Building Regulations that are often negotiated between Building Control and the Design and Conservation team teams generally include:

Part A: Structural Safety
- Support of retained walls.
- Basements and excavations.
- Underpinning.

Part B: Fire Safety
- Proposed change of use of a building.
- Proposed introduction of a second floor.
- Proposed subdivision of a building into separate units.
- Roofs covered in combustible materials e.g. thatch and wood shingles.
- Combustible materials on boundaries e.g. weatherboard and exposed timbers.

Part C: Resistance to contaminants and moisture
- Proposed installation of dpcs and dpms.
- Proposed change of use of a building.

Part E: Resistance to sound
- Proposed change of use of a building.
- Proposed subdivision of a building into separate units.

Part F: Ventilation
- Installation of kitchens and bathrooms.
- Proposed change of use of a building.
- Proposed subdivision of a building into separate units.

Part G: Hygiene
- Installation of an industrial or commercial kitchen.
- Flues and vents.

Part H: Drainage and waste disposal
- Changes to positions of kitchens or bathrooms.
- Proposed vent pipes.
- Involving features such as historic floors, panelling or decorative plaster ceilings.

Part J: Heat producing appliances
- Positions of boilers, flues and vents.

Part K: Protection from falling

- Alterations to Listed buildings, including historic staircases or railings.
- Proposed external staircases.

Part L: Conservation of fuel and power

- Insulation in Listed buildings.
- Double glazing.

Part M: Access to and Use of Buildings – including Disability Access and Disability Discrimination Act.

- Ramps, handrails, lifts.
- Internal alterations to Listed buildings.
- Change of use of buildings.
- Buildings open to the public.
- Public buildings.

# GLOSSARY

**Design elements**
The design elements are the basic building-blocks of design theory; point, line, shape, form or mass, texture, tone and colour.

**Design theory**
Design theory is the deliberate application of the design elements and the principles of composition to formulate high quality design solutions.

**Principles of composition**
The principles of composition is the aspect of design theory that addresses the combination of the design elements into an integrated design; pattern, rhythm, repetition, variety, contrast, emphasis, dominance, simplicity, unity, harmony, balance, scale and proportion and sequence.