DRAFT

AIR QUALITY & EMISSIONS

Technical Planning Guidance

North Northamptonshire Council

Summary

This technical guidance document aims to provide clarity and advice in relation to air quality in a planning context and encourages good practice through mitigating impacts. The objective of mitigation is to focus on emissions reductions to ensure health guideline values are not breached. The planning system has an important role to play in driving forward improvements in local air quality, minimising exposure to pollution, and improving the health and well-being of the population.

To ensure the prompt review of details submitted for mitigating air pollution applicants, developers and air quality consultants are advised to read this document prior to submitting a planning application. Consideration of air quality in the development design will lead to lower emissions and an ambient environment. Good design at the outset is the most effective and straightforward way to a low emission development.

The Environment Act 2021 established a legally binding duty on the UK government to bring forward at a new air quality target for 2.5 micro gram particulate matter (PM2.5) in secondary legislation. Therefore, in addition to addressing vehicle emissions, the assessment and control of dust impacts during demolition and construction of a development must also be considered.

The adopted Technical Planning Guidance will be a material consideration in determining planning applications in North Northamptonshire to supplement the policies within the adopted Local Plans. As such it will be given significant weight in the decision-making process in relation to air quality matters. It should also be read in conjunction with the Air Quality Strategy for North Northamptonshire.

This technical planning guidance has been prepared in conjunction with the East Midlands Air Quality Network (EMAQN) and West Yorkshire Low Emission Strategies Planning Guidance. This document supplements the National Planning Policy

Framework (NPPF)[1] and addresses air pollution as a material planning consideration. This guidance will be reviewed and updated as national and local policy changes.

The document deals primarily with the air quality impacts from traffic and construction emissions. However, point source emissions such as generators, incinerators, power plants and other potentially significant industrial/commercial sources of air pollution, use of biomass boilers are addressed through the pollution prevention and control regulations. Separate guidance is available to assist developers when considering air emissions from biomass boilers[2]. The government's position on Net Zero emissions needs to be taken into account for any biomass proposals.

This document seeks to minimise or offset road transport emissions wherever practicable, by securing reasonable emission mitigation. When mitigation is the objective rather than modelling, the cumulative impacts arising from all developments are reduced.

A key theme of the National Planning Policy Framework (NPPF) is that developments should enable future occupiers to make green vehicle choices and it explicitly states that low emission vehicle infrastructure, including electric vehicle re-charging, should be provided. This document seeks to develop consistent EV re-charging standards for new developments across North Northamptonshire.

In April 2023 DEFRA published an Air Quality Strategy Framework for Local Authority Delivery | GOV.UK[3]. This policy paper outlines measures that local authorities are required to take to reduce air pollution in their area. The main emphasis has been placed on reducing fine particulate matter and therefore any development which involves creating dust during construction must submit a dust management plan.

This guidance will be updated when the government releases emissions targets and

[1] National Planning Policy Framework | GOV.UK
[2] Biomass Policy Statement | GOV.UK

[3] Policy Paper: Air Quality Strategy for Local Authority Delivery | GOV.UK

implementation policies for Net Zero emissions.

This document provides guidance that is not exhaustive; if you have any questions or wish to discuss the requirements of a specific scheme, please contact the Environmental Protection team at North Northamptonshire council:

North Northamptonshire

Corby area: **envhealth.cbc@northnorthants.gov.uk**

East Northamptonshire area: **envprotect.enc@northnorthants.gov.uk**

Kettering area: **environmentalprotection.kbc@northnorthants.gov.uk**

Wellingborough area: **envprotection.bcw@northnorthants.gov.uk**

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1. Air Quality in North Northamptonshire

North Northamptonshire Council reviews and assesses the air quality across its area to identify if there are any breaches of the National Air Quality Objectives. The council has a network of diffusion tubes which monitor NO_2 at 100 locations. Monitoring results in North Northamptonshire are consistently well below the national objective of 40 µg/m^3. Each year the results are collated in our Annual Status Report and can be accessed on the Air Quality webpage.

Air Quality | North Northamptonshire Council

In recent years NO_2 concentrations have also generally declined across the UK. However, since 2012 an unprecedented amount of land has been developed in rural areas which creates traffic congestion in towns. For this reason, the focus on tackling air pollution is through mitigation.

1.1 Air Pollution and Planning Policy – National Context

Local authorities have a statutory duty to work towards compliance with health-based Air Quality Objectives for key pollutants in the National Air Quality Regulations. Therefore, the impact on air quality is a material consideration in making planning decisions.

The National Planning Policy Framework (NPPF; 2019) states that planning policies and decisions should contribute to and enhance the natural and local environment. Development should, wherever possible, help to improve local environmental conditions such as air quality. Planning decisions should sustain and contribute towards compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impacts from individual sites in local areas. Planning

decisions should ensure that any new development in Air Quality Management Areas and Clean Air Zones is consistent with the local Air Quality Action Plan. An Air Quality Action Plan is a legal requirement for councils with an Air Quality Management Area, which sets out the councils' planned actions to meet the National Air Quality Objectives.

Opportunities to improve air quality or mitigate impacts should be identified, such as through traffic and travel management, and green infrastructure provision and enhancement. So far as possible these opportunities should be considered at the plan-making stage, to ensure a strategic approach and limit the need for issues to be reconsidered when determining individual applications.

A key consideration in the NPPF is the cumulative impact of development on pollution levels; therefore, this guidance seeks to simplify assessment and mitigation procedures through a standardised development scheme classification, according to potential scheme impact, while recommending the types of appropriate and reasonable mitigation measures that should be designed into each scheme classification. Mitigation is more important than modelling.

The process outlined below provides an indicative step by step approach to dealing with planning applications that have the potential to create relevant exposure to road transport emissions (nitrogen dioxide (NO_2) and particulate matter ($PM_{10/2.5}$)) for future occupants of a development, or where the proposed development scheme has the potential to increase concentrations of pollutants in the surrounding area arising from road transport emissions (see flow chart – Figure 2 below).

A basic hierarchy of principles is used as the basis for mitigating the operational air quality impacts associated with development schemes.

1.2 Air Pollution and Planning Policy – Local Context

This is current developer guidance set outs simplified guidance for dealing with air quality and is aimed at all those involved in the submission and determination of planning applications where air quality needs to be addressed.

North Northamptonshire Joint Core Strategy and (2011-2031) makes reference to air quality in policy 8 (e) i. and ii.

Policy 8 (e)
Ensure quality of life and safer and healthier communities by:

i. Protecting amenity by not resulting in an unacceptable impact on the amenities of future occupiers, neighbouring properties or the wider area, by reason of noise, vibration, smell, light or other pollution, loss of light or overlooking;
ii. ii. Preventing both new and existing development from contributing to or being adversely affected by unacceptable levels of soil, air.

At the time of publication of this document the North Northamptonshire Local Plan is being developed, which incorporates Corby, East Northamptonshire, Kettering and Wellingborough. When the timeline for publication is available on the North Northamptonshire Local Plan | North Northamptonshire Council (northnorthants.gov.uk) webpage.

1.3 Role of Building Control

The Building Regulations are a major driving force for the construction of sustainable buildings and infrastructure. These are regulated through Building Control Bodies (BCB) either with the Local Authority BCB or a private BCB. All new developments, material changes of use and alterations and additions to existing buildings must comply with Building Regulations. For the purposes of the reduction of air pollution these parts are relevant:

- Part F: Minimising the ingress of external pollutants

- Part L1 and L2: Conservation of Fuel and Power, including solid fuel heating systems
- Part S: Infrastructure for Charging Electric Vehicles
    - for parking spaces associated with a residence or dwelling
    - for parking spaces associated with new buildings other than residential or mixed use.
    - Guidance is provided for the minimum standards for charging points, cable routes and location of these.

At the time of writing this document further radical new standards have been proposed and will be in operation by 2025 which will require not only to improve the energy efficiency of existing homes and other buildings but will also ensure our new homes are fit for the future, by reducing emissions from new homes by at least 75%.

1.4 Role of the Environmental Protection Team

Environmental Protection (EP) are consulted on planning applications for new developments within the area of North Northamptonshire. EP consider a number of environmental issues, including air quality, before making a recommendation to the Planning department.

Typically, this recommendation is that the application either be approved, approved subject to appropriate conditions, or refused. The recommendations made by EP are not binding on the Planning department, who will consider all relevant issues concerning a planning application, but air quality is a material planning consideration that must be taken into account in the decision-making process.

In addition to making recommendations to the Planning department, EP can provide advice to applicants and their consultants prior to the submission of a planning application and/or the preparation of an air quality statement.

The EP department also has responsibilities to observe legislation and policy published by the UK government. DEFRA has a duty to reduce airborne concentrations of fine particulate matter and therefore any development which involves creating dust during construction must submit a dust management plan.

1.4 Clean Air Act Authorisations

Applicants should be aware that a Clean Air Act 1993 Chimney height approval needs to be sought where a furnace is burning liquid or gaseous matter at a rate of 366.4 kilowatts or more or burning pulverised fuel or any solid matter at a rate of more than 45.4 kilograms or more an hour.

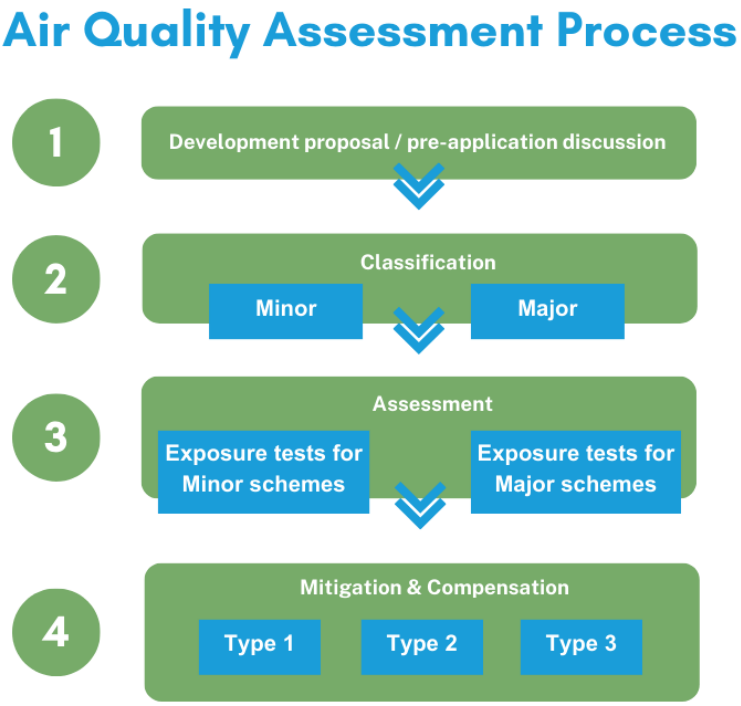
Flues associated with this plant should therefore be at the recommended heights above nearby buildings and installed at least 3m above any general access areas and should meet discharge velocities above the recommended minimum.

With the move towards Net Zero emissions and impending government policy changes, the long-term operational use of CHP and biomass boilers needs consideration.

2. Assessment and Mitigation

Incorporating mitigation measures into scheme designs is standard practice. This approach helps to counteract incremental increases in air pollution associated with cumulative development over time. Mitigation applies to all developments irrespective of whether they are in an AQMA or not. Figure 1 outlines the air quality assessment process.

Figure 1: Assessment and Mitigation Flow Chart



2.1 Step 1 – Pre-Application Discussion

It is important that the planning authority's requirements regarding scheme sustainability and the planning application validation process are clarified at the earliest stage possible.

For this reason pre-application discussions involving planning management, air quality and public health professionals should take place at the outset to ensure an optimum scheme design and avoid unnecessary delays in the planning process. This is particularly pertinent in

relation to large scale major schemes.

If an EIA is required for the proposed development, then air quality assessment (modelling) will be undertaken as part of the EIA process. The air quality assessments will include the consideration of potential increased exposure for relevant receptors affected by the development, (Appendix 2). An air quality assessment is not required for developments which do not trigger an EIA.

The developments which include processes which emit air pollution must be permitted through either the environment agency (A1 installations[4]) or the local authority (A2 and B installations[5]). The applicant is advised to check these websites for Processes may include:

- Industrial installations;
- Biomass boilers;
- Combined Heat and Power (CHP) plant; and
- Landfill sites, quarries, minerals extractions etc.

NorthNorthants:

Environmental Permits | North Northamptonshire Council

Follow the council link to Environmental Permitting, Permitted Processes, Inspection and Regulation.

2.2 Step 2 – Classification of the Development

In order to meet or maintain air quality objective levels or Net Zero, the assessment of the impacts of development on air quality are focused towards emissions mitigation.

To simplify the assessment process and align with planning thresholds for developments, a development is classified as either a minor or major development.

[4] A1 Installations | Environmental Permits | GOV.UK
[55] Local Authority Environmental Permits | GOV.UK

The Town and Country Planning (Development Management Procedure) (England) Order 2010 defines minor and major developments as:

Minor development means—

(i) development of an existing dwellinghouse, or development within the curtilage of such a dwellinghouse, for any purpose incidental to the enjoyment of the dwellinghouse as such;
(ii) the extension of an existing building used for non-domestic purposes where the floorspace created by the development does not exceed 250 square metres; and
(iii) the alteration of an existing building where the alteration does not increase the size of the building.

Major development means development involving any one or more of the following—

a) the winning and working of minerals or the use of land for mineral-working deposits;
b) waste development;
c) the provision of dwellinghouses where —
    (i) the number of dwellinghouses to be provided is 10 or more; or
    (ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);
d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more; or
e) development carried out on a site having an area of 1 hectare or more;

2.3 Step 3 – Exposure Assessment

Applicants need to consider whether the development will expose future occupiers to unacceptable levels of air pollution, defined as the exceedance of an air quality standard at the receptor location, and ensure that their development's potential

benefits to air quality and health are maximised.

Currently, in North Northamptonshire it is unlikely that developments will introduce future occupiers to areas of poor air pollution as a result of traffic pollution. However, applicants must assess exposure when they are introducing a more sensitive use (residential, school, children's nursery, care homes) to an area which is impacted by commercial or industrial air pollutants.

The determination of relevant exposure, where a short-term objective allows a number of exceedances of the standard because of considerations of feasibility and practicability, should be ascertained through reference to the Council's latest review and assessments of air quality;

Air Quality | North Northamptonshire Council

Data can be checked on a case-by-case basis with the Environmental Protection Team at the Council during the pre-application stage.

2.3.1 Scheme Design

A major goal of urban planning is to make towns more livable by improving the quality of life for its residents. Reducing the exposure of the future residents to air pollution should be considered at the scheme design phase, particularly when the public are being introduced to areas of exceeding limit values. The following mitigation through design measures should be explored:

- Can the curtilage of a residential building be set back beyond the pollutant exceedance zone?

- Can the scheme be designed to place residential units at the rear of the development or on higher floors?

- Can vegetative barriers, including appropriate tree species, offer some degree of separation from the road? (While several reports[6] [7] have highlighted some potential for certain vegetation species to reduce particulate concentrations, they also indicate a limited effectiveness in reducing exposure to nitrogen dioxide (NO_2) in the urban area)

- Can design of built forms avoid the creation of canyons, allowing a greater degree of pollutant dispersal?

- Mechanical ventilation should not automatically be seen as providing effective mitigation against exposure to air pollution and should be scrutinised carefully (eg, inlet location and level of pollutant attenuation, together with energy, maintenance and noise considerations). Windows which can be opened have a positive effect on wellbeing and mental health.

2.3.2 Air Quality Impact Assessment

For all developments classified as Minor or Major, where relevant exposure is not a concern, an air quality assessment (AQA) is not required.

An AQA is required for all large-scale major developments that trigger an EIA, a protocol for which is provided in Appendix 2. The protocol includes details of how to undertake an emissions assessment for a development and a calculation of damage costs.

2.3.3 Evaluation of the Development

Following the development classification, mitigation is then proposed to make the development sustainable for each classification. Mitigation is divided into three types

[6] Trees & Sustainable Urban Air Quality: Using Trees to Improve Air Quality in Cities Lancaster University | Urban Trees
[7] Why Plant Trees? | Woodland Trust

and these are outlined in section 2.3.4.

Table 1 below summarises the type of assessment, mitigation and/or compensation required for each of the development classifications.

Table 1: Summary of the Air Pollution Mitigation Requirements

Development Classification	Assessment Required	Mitigation	Compensations
Minor	Exposure	Type 1	
Major	Exposure	Type 1 and 2	
EIA	AQ Impact Assessment	Type 1 and 2	Type 3

2.3.3 Step 4 – Mitigation and Compensation

It is envisaged that by securing reasonable emission mitigation on each scheme, where appropriate, the cumulative impact effects arising from overall development can be minimised.

This guidance assumes that minor schemes should not have a significant impact on air quality if the appropriate Type 1 and 2 mitigation, as outlined, is incorporated into development proposals. Where appropriate mitigation has been incorporated, such schemes can be considered as being sustainable in air quality terms.

In addition to Type 1 and Type 2 mitigation, large scale major schemes may require additional Type 3 mitigation which is determined in scale by the calculation of emission damage costs associated with the scheme.

The largest source of PM10 and PM2.5 in the industrial sector in 2021 was construction and demolition. Construction activities that contribute to air pollution include: land clearing, operation of diesel engine exhausts, demolition and burning. All construction sites generate high levels of dust (typically from concrete, cement, wood, stone, silica) and this can carry for large distances over a long period of time. These

types of construction must be appropriately mitigated through construction management plans.

In 2023 the Institute of Air Quality Management published an updated guidance document on the assessment of dust from demolition and construction. This publication shall be adhered to in proposed developments to ensure that dust management plans are implemented appropriately.

The required mitigation is summarised below, and further detail is provided in the following section:

Table 2: Summary of the Potential Air Pollution Mitigation

Type 1	• Adherence to the IAQM[8] Best Practice Guidance for all demolition and construction works. Dust mitigation is required for all dust generating activities for both minor and major planning applications. • Compliance with Parts F (ingress of pollution), L and S (EV charging infrastructure) of the Building Regulations. • All gas-fired boilers to meet a minimum standard of 40mg NOx/kWh or consideration of Net Zero heat sources • Provision of cycle storage infrastructure • Green Infrastructure: where it can be shown that such infrastructure will reduce exposure from air pollution

Type 2	• Code of Construction Practice Construction Environmental Management Plan (CEMP) to be incorporated into Major and EIA developments and agreed with Council Officers.
	• NRMM Specifications
	• Construction Environmental Management Plan (CEMP)
	• Provide a fleet emission reduction strategy, including low emission fuels and technologies, including ultra-low emission service vehicles
	• Active travel (cycling/walking) infrastructure including, but not limited to:
	  ○ Developing cycle routes or pedestrianised areas and infrastructure to support low emission modes of transport;
	  ○ improved facilities to encourage cycling or other non-motorised travel (shower facilities, secure cycle storage etc) and signage;
	• Measures to support public transport infrastructure and promote use
	• Measures to support cycling and walking infrastructure
	• Measures to support the uptake of EVs in Northamptonshire
	• Measures to support car clubs and integrate with electric car clubs

[8] Construction Dust Guidance 2023 | IAQM

Type 3	• Additional measures that may be required by either planning condition or Planning Obligation by a Section 106 Agreement to make the site acceptable, using reasonable endeavours.

Note: The Type 2 & 3 mitigation measures presented in this guidance are not exhaustive lists and should be seen as defaults. Innovative solutions to air quality mitigation are encouraged.

2.4 Mitigation

The type of mitigation agreed will be informed by:

- Specific needs identified in site specific spatial policy allocations
- Outcomes from the Transport Statement/ Assessment
- Defra air quality guidance

2.4.1 Type 1 Mitigation

(a) Construction Dust Emissions

The National Planning Policy Framework makes it clear that unavoidable dust emissions are controlled, mitigated or removed at source. The creation of dust contributes to particulate air pollution as well as nuisance and mitigation for all developments is required. In light of the UK government's change of the $PM_{2.5}$ target value to 10 ug/m^3 all dust generating activities must be mitigated with in the site boundary of the planning application.

It is the responsibility of the applicant to ensure that the contractors and subcontractors comply with dust mitigation proposals. The dust mitigation statement or plan must be given to contractors and subcontractors. Having mitigation in place alleviates any nuisance issues.

For minor developments which create dust the applicant must submit a statement identifying site activities that create dust and how to mitigate it.

Many construction tasks create dust, consider the duration of the activity and the potential to become airborne. High dust levels are caused by one of more the following:

- **demolition activities**
- **equipment** – using high energy tools, such as cut-off saws, sanding, grinders, wall chasers and grit blasters produce a lot of dust in a very short time
- **work method** – dry sweeping can make a lot of dust when compared to vacuuming or wet brushing
- **time** – the longer you work the more dust there will be

The Health and Safety Executive publish have produced an information sheet on construction dust, with information on the health impacts[9].

The mitigation guidance and requirements are outlined in section 3.1 Construction Phase - Emissions Mitigation and Assessment.

(b) Zero Emissions Re-charging Infrastructure Plan

A key theme of the NPFF is that developments should enable future occupiers to make green vehicle choices and it explicitly states that low emission vehicle infrastructure, including electric vehicle (EV) re-charging, should be provided. This guidance seeks to develop consistent EV re-charging standards for new developments in Northamptonshire.

At the time of adopting this technical planning document electric vehicles are more readily available than other zero emissions fuels so this guidance will refer to

[9] Information Sheet on Construction Dust | HSE

applicants being required to submit an electric vehicle re-charging infrastructure plan.

Electric or hybrid-electric powered vehicles currently form a smaller percentage of the total number of vehicles on the road. However, moving towards 2030 electric/hybrid vehicles there will be more uptake. New combustion engine cars and vans will not be sold after 2030 and hybrids will not be sold after 2035. The UK government announced that electric motoring will also become cheaper than petrol or diesel equivalents, with price parity expected in the mid-2020s[10].

- Step 1 will see the phase-out date for the sale of new petrol and diesel cars and vans brought forward to 2030.
- Step 2 will see all new cars and vans be fully zero emission at the tailpipe from 2035.

Between 2030 and 2035, new cars and vans can be sold if they have the capability to drive a significant distance with zero emissions (for example, plug-in hybrids or full hybrids). It is essential that EV recharging infrastructure is in place to accommodate this change.

The Building Regulations comprehensively set out the requirement for EV charging points and infrastructure and this must be adhered to.

Approved Document S: infrastructure for charging electric vehicles became valid from 15 June 2022 and all relevant developments must comply with this.
Approved Document S | Building Regulations | GOV.UK

The IET '*Code of Practice for EV Charging Equipment Installation'* provides details of charging points and plugs specifications; for both exterior and garage situations.[11]

[10] Transitioning to Zero Emission Cars and Vans 2035 Delivery Plan | GOV.UK
[11] Code of Practice for Electric Vehicle Charging Equipment Installation 3rd Edition - EV Charging Standards | The Institute of Engineering and Technology

Zero emissions vehicle fuel technology for vehicles is progressing and should other forms of fuel become easily available for adoption then these can be proposed by the applicant. Electric vehicles have been promoted by the government, but alternative technologies such as the hydrogen fuel cell are available. If other fuels become easy to adopt and incorporate into a scheme, then they can be proposed in the zero emissions re-charging infrastructure plan.

(c) Heating and Hot Water Generating Appliances

While the main sources of air pollutants are dominated by road transport and large combustion plants; homes and the choice of heating and hot water systems also have an impact on air pollution. Levels of oxides of nitrogen (NO_x) vary considerably across the UK, with levels in urban areas and close to major roads many times greater than in rural areas. Emissions from heating systems have a greater impact in areas where there is a high population density, but improved air quality benefits health in both urban and rural settings. All gas-fired boilers must meet a minimum standard of 40 mg NOx/kWh.

It should be noted that Maximum BREEAM credits can be gained for low NOx technology.

(d) Outdoor Private and Communal Space

Private gardens, roof gardens, communal gardens and terraces are a feature in most residential developments and some commercial developments. The location of outdoor space in relation to sources of air pollution (for example busy roads and boiler flues) is an important consideration. Exposure should be minimised through appropriate positioning and orientation of the space away from busy roads and combustion sources.

(e) Green Roofs, Walls and Planting

Unlike nitrogen dioxide pollution, fine particle pollution travels further distances. The UK government target for PM2.5 to be achieved by 2028 acknowledges the impact fine particles have on health. As well as increasing biodiversity, plants can play a role in trapping fine particles (PM10 and PM2.5) found in the air we breathe. Research indicates that plants with small leaves (which disrupt the flow of air) and fine hairs on their surface work best; however, leaves which cover a large surface or are grooved also provide surfaces upon which particles can be trapped. For more information and the types of plants which may be beneficial[12]. To help improve air quality, developers are encouraged to source trees and plants which have these characteristics to include in open spaces, and on green walls and roofs. Information on green screens can be found on the LondonAir website[13].

[Decide if you want this section included in the SPD] Planning policy what are the current requirements for amenity space?

(f) Cycle parking and facilities

The promotion of cycling and other methods of active travel are one of the core principles of the NPPF and it is increasingly being seen as a vital part of any local authority plans to tackle congestion, improve air quality, promote physical activity and improve accessibility.

Provision for cycling is better when integrated with spatial planning of development, and with integrated planning for movement in all its forms. The guidance below covers general advice for street planning as well as some focused on cycling specifically.

'Manual for streets[14]' provides guidance that aims to reduce the impact of motor vehicles on residential streets through intelligent design which gives a high priority to the needs of pedestrians, cyclists and users of public transport. These philosophies

[12] Designing Vegetation Barriers | Nature Journal of Science
[13] Green Screen Report | LondonAir
[14] Manual for Streets | Department for Communities and Local Government

are built on further in 'Manual for streets 2'[15] which demonstrates through guidance and case studies how they can be extended beyond residential streets to encompass both urban and rural situations.

'Handbook for cycle-friendly design[15]' from Sustrans provides technical design guidance starting from network planning, through infrastructure features and construction design, and including management and maintenance. Whilst 'Making Space for Cycling[16]' is a guide for new development and street renewal in existing urbanised areas, prepared by CycleNation. It covers the design principles required, from main roads down to local streets, as well as complementary measures such as cycle parking.

Department for Transport have also composed guidance in the form of Local Transport Notes.[17,18]

2.4.2 Type 2 Mitigation Measures

Type 2 mitigation should be incorporated into scheme design where appropriate, in addition to Type 1 measures.

Table 5: Examples of Type 2 Mitigation for Scheme Sustainability

Standard mitigation plus:	
Residential	• Construction Environmental Management Plan (CEMP) • Non-road mobile machinery (NRMM) adoption • Measures to support public transport infrastructure and promote active travel • Using green infrastructure[19] in particular trees to absorb dust and other pollutants

[15] Sustrans Design Manual Handbook for cycle-friendly design April 2014 Handbook for Cycle Friendly Design | Sustrans
[16]Cambridge Cycling Campaign - Making Space for Cycling: A guide for new developments and street renewals Making Space For Cycling | Cambridge Cycling Campaign
[17] Local transport notes Department for Transport | Local Transport Notes
[18]Department for Transport | Shared Routes Cyclists and Pedestrians - Shared use routes for pedestrians and cyclists (LTN 1/12)
[19] Urban Air Quality, The Woodland Trust, April 2012 Woodland Trust | Urban Air Quality

	• A Welcome Pack available to all new residents online and as a booklet, containing information and incentives to encourage the use of sustainable transport modes from new occupiers • Eco-driver training and provision of eco-driver aid to all residents • Measures to support the Northamptonshire Electric Vehicle Plan • EV recharging infrastructure within the development (wall mounted or free standing in-garage or off-street points) • Car club provision within development or support given to local car club/EV car clubs • Designation of parking spaces for low emission vehicles • Measures to improve cycle paths to link cycle network • Adequate provision of secure cycle storage • Measures to support cycling and walking infrastructure
Commercial As above plus:	• Differential parking charges depending on vehicle emissions • Public transport subsidy for employees • All commercial vehicles should comply with either current or previous European Emission Standard • Fleet operations should provide a strategy for considering reduced emissions, low emission fuels and technologies • Use of ultra-low emission service vehicles • Support local walking and cycling initiatives • On-street EV recharging • Contributing funding to measures, including those identified in air quality action plans and low emission strategies, designed to offset the impact on air quality arising from new development
Additional mitigation	• Contribution to low emission vehicle refuelling infrastructure • Low emission bus service provision or waste collection services • Bike/e-bike hire schemes • Contribution to renewable fuel and energy generation projects • Incentives for the take-up of low emission technologies and fuels

Note: The above list is not exhaustive and further options may be suggested where appropriate and justified, depending on the scale of development and air quality issues within the local area.

(a) Cycling Infrastructure

The promotion of cycling and other methods of active travel are one of the core principles of the NPPF and it is increasingly being seen as a vital part of any local authority plans to tackle congestion, improve air quality, promote physical activity and improve accessibility.

Provision for cycling is better when integrated with spatial planning of development, and with integrated planning for movement in all its forms. The guidance below covers general advice for street planning as well as some focused on cycling specifically.

'Manual for streets[20]' provides guidance that aims to reduce the impact of motor vehicles on residential streets through intelligent design which gives a high priority to the needs of pedestrians, cyclists and users of public transport. These philosophies are built on further in
'Manual for streets 2[21]' which demonstrates through guidance and case studies how they can be extended beyond residential streets to encompass both urban and rural situations.

'Handbook for cycle-friendly design[22]' from Sustrans provides technical design guidance starting from network planning, through infrastructure features and construction design, and including management and maintenance. Whilst 'Making Space for Cycling[23]' is a guide for new development and street renewal in existing urbanised areas, prepared by CycleNation. It covers the design principles required, from main roads down to local streets, as well as complementary measures such as cycle parking. Cambridge city council have published a cycle parking guide.[24]

Department for Transport have also composed guidance in the form of Local Transport Notes.[25,26]

(b) Non-Road Mobile Machinery (NRMM) Specifications

[20] Manual for Streets | Department for Communities and Local Government

[21] Manual for Streets 2 | Department for Communities and Local Government
[22] Sustrans Design Manual Handbook for cycle-friendly design April 2014 Handbook for Cycle Friendly Design | Sustrans
[23] Cambridge Cycling Campaign - Making Space for Cycling: A guide for new developments and street renewals Making Space for Cycling | Cycling Spaces A Guide for New Developments
[24] Cambridge Council | Parking Guide for New Developments
[25] Local Transport Notes | Department for Transport https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3808/ltn-2-08.pdf
[26] Department for Transport | Shared Use Routes for Pedestrians and Cyclists LTN 1/12

NRMM of net power between 37kW and 560kW will be required to meet the standards based upon the engine emissions standards.

From 1 September 2020 the following changes will apply:

(a) NRMM used on any construction or demolition site within the Northamptonshire

urban area will be required to meet Stage IIIB as a minimum.

(b) NRMM used on any major classified development will be required to meet Stage IV of the Directive as a minimum.

The requirements may be met using the following techniques;

(a) Reorganisation of NRMM fleet
(b) Replacing equipment (with new or second hand
(c) equipment which meets the policy)
(d) Retrofit abatement technologies
(e) Re-engining.

All eligible NRMM should meet the standards above unless it can be demonstrated that the machinery is not available or that a comprehensive retrofit to meet both PM and NOx

emission standards is not feasible.

Note: until the UK government publishes specifications for NRMM then the European standards will apply.

2.4.3 Type 3 Mitigation Measures

Type 3 emission mitigation are bespoke and proportional to the calculated damage cost. This type of mitigation is only required in the case of large scale developments; in addition to Type 1 and 2 measures having been applied. In some cases the calculated value of the air quality impact may be used on projects to ‘offset’ the emissions from the proposal.

The process by which these measures are calculated and chosen can be found in Appendix 3.

3. Construction Phase - Emissions Mitigation and Assessment

3.1 Construction Phase Assessment

Continuous day to day works and use of machinery on site, coupled with numerous vehicle movements to and from site, can result in demolition and construction sites emitting high volumes of dust and emissions to atmosphere. Construction is a significant source of particulates (PM10/PM2.5) and Nitrogen Dioxide (NO2) pollution.

Air pollution harms the environment and human health and wellbeing. Poor air quality can cause serious health problems, shorten life and reduces the quality of life for all exposed to it. In June 2012 the World Health Organisation (WHO) confirmed that fumes from diesel engines are carcinogenic. Its research determined that exposure causes lung cancer and tumours to the bladder. The latest evidence suggests that construction and demolition activity is responsible for 15 per cent of air pollutant emissions.

Construction and demolition activities can result in the following air quality impacts:

- Visible dust plumes;
- Dust deposition;
- Elevated PM10 and PM2.5 concentrations
- Increased concentrations of Nitrogen Dioxide (NO2).

Air pollutants result from dust generating activities on-site such as the breaking-up of materials and the movement of soil and materials, as well as from the exhaust of diesel powered machinery and vehicles, both static and non-road mobile machinery (NRMM). Vehicles accessing and travelling across the site can also generate dust.

For major developments the demolition and construction phases of development proposals lead to both nuisance dust and elevated fine particulate matter concentrations (PM10 and PM2.5). Each scheme is evaluated on what activities are being undertaken. Meteorological conditions cannot easily be predicted. However, dust emissions increase during dry and windy conditions.

In the case of a major development an assessment of the air quality effects of the construction phase is required. Guidance published by the Institute of Air Quality Management[Error! Bookmark not defined.] (IAQM) sets out the methodology for assessing the impacts on air quality from the construction phase of any development.

The guidance, produced in consultation with the construction industry, considers the potential for dust emissions from the following activities:

- Demolition
- Earthworks (soil stripping, ground levelling, excavation)
- Construction, and
- Track out (the transportation of soil from the site onto public roads)

For each of these activities, the guidance considers three separate dust effects:

- Annoyance due to dust soiling
- Harm to ecological receptors
- The risk of human effects due to a significant increase in exposure to PM10 and PM2.5

The methodology takes into account the scale (classed as small, medium, large) to which the above effects are likely to be generated and the distance of the closest receptors in determining the significance of effects arising from construction.

Demolition and construction subcontractors must be given the approved plans and mitigation proposals and adhere to them.

3.2 Construction Phase Mitigation

The IAQM Guidance on the assessment of dust from demolition and construction or alternatively the London Best Practice Guidance[27] should be used to inform the choice

[27] The Control of Dust and Emissions from Construction and Demolition, Best Practice Guidance. Available at Control of Dust and Emissions | London.gov.uk

of mitigation measures required during construction. Mitigation plans need to incorporate dry and windy conditions into them.

4. Scheme Mitigation Statement

Each development requires a brief mitigation statement; outlining the measures proposed (Type 1-3) depending on development scale.

This would also include the mitigation measures suggested from the IAQM Guidance on the assessment of dust from demolition and construction**Error! Bookmark not defined.** or London Best Practice Guidance[27], to minimise dust and other emissions to atmosphere during the construction phase.

In addition, in the case of major developments, the statement should include an assessment of impacts and mitigation measures associated with the construction phase, as assessed as part of the wider development's detailed air quality assessment (see Appendix 2).

- The calculated damage cost (Major proposals).

- Proposed mitigation measures.

- Estimated mitigation cost (Major proposals) that is equivalent to the value of the emissions calculation (appropriate to the type and size of development and local policy requirements);

- A proposed demolition/construction management plan that includes:
    - A brief project description and likely sources of dust emissions;
    - Measures to be adopted to minimise dust emissions;
    - Emergency measures to be adopted in the event of unforeseen circumstances;
    - Incident logging and reporting procedures.

Appendix 4 provides a comprehensive list of dust and fumes pollution which should be included in the scheme mitigation statement.

Appendix 1: Electric Vehicle Charging Point Specification

EV ready domestic installations

- Cable and circuitry ratings should be of adequate size to ensure a minimum continuous current demand for the vehicle of 16A and a maximum demand of 32A (which is recommended for Eco developments).
- A separate dedicated circuit protected by an RCBO should be provided from the main distribution board, to a suitably enclosed termination point within a garage, or an accessible enclosed termination point for future connection to an external charge point.
- The electrical circuit shall comply with the Electrical requirements of BS7671: 2008 as well as conform to the IET code of practice on Electric Vehicle Charging Equipment installation 2012 ISBN 978-1-84919-515-7.
- If installed in a garage all conductive surfaces should be protected by supplementary protective equipotential bonding.

For vehicle connecting points installed such that the vehicle can only be charged within the building, e.g. in a garage with a (non-extended) tethered lead, the PME earth may be used. For external installations the risk assessment outlined in the IET code of practice must be adopted, and may require an additional earth stake or mat for the EV charging circuit. This should be installed as part of the EV ready installation to avoid significant on cost later.

EV ready commercial installations

Commercial and industrial installations may have private 11,000/400 V substations where a TN-S supply may be available, simplifying the vehicle charging installation design and risk analysis. It is therefore essential for developers to determine a building’s earthing arrangements before installation.

Commercial vehicles have a range of charge rates and it is appropriate to consider a 3-phase and neutral supply on a dedicated circuit emanating from a distribution board. More than one EV charging station can be derived from a source circuit, but each outlet should be rated for a continuous demand of 63Amps. No diversity should be applied throughout the EV circuitry. Three phase RCBOs should be installed and the supply terminated in a switched lockable enclosure. If an external application (for example car park or goods yard) is selected, the supply should be terminated in a feeder pillar equipped with a multi-pole isolation switch, typically a 300mA RCD, a sub-distribution board (if more than one outlet is fed from the pillar). If an additional earthing solution is required, the earth stake can be terminated within this pillar. See IET guideline risk assessment.

Provided by Andrew Whittles, Low Emission Strategies Ltd.

Appendix 2 Air Quality Assessments

Introduction

The purpose of an air quality assessment is to determine the predicted impact of a development on local air quality, public health and/or the local environment, to help determine the appropriate level of mitigation from a development. The assessment should be carried out by a developer's air quality consultant.

Air Quality Assessment Process

For consistency, air quality assessments for developments should, where possible, follow similar methodologies.

Local authorities will work with developers by providing guidance on the suitability of such measures, which should be incorporated at the early design stage of any proposal.

Guidance on the methodologies to be used for air quality assessments is also available in the Defra's Technical Guidance Note**Error! Bookmark not defined.**, and other guidance available from the Defra and IAQM webpages[28].

Key Components of an Air Quality Assessment

The assessment will require dispersion modelling utilising agreed monitoring data, traffic data and meteorological data. The modelling should be undertaken using recognised, verified local scale models by technically competent personnel and in accordance with LAQM TG16**Error! Bookmark not defined.**. The study will comprise:

1. The assessment of the existing air quality in the study area for the baseline year with agreed receptor points and validation of any dispersion model;

[28] Environmental Protection UK and the Institute of Air Quality Management - Land-Use Planning & Development Control: Planning For Air Quality (January 2017). Available at Air Quality Planning Guidance | IAQM

2. The prediction of future air quality without the development in place (future baseline or do-nothing);

3. The prediction of future road transport emissions and air quality with the development in place (with development or do-something).

4. The prediction of future road transport emissions and air quality with the development (with development or do-something) and with identified mitigation measures in place.

5. Sensitivity test allowing for no improvement in traffic and background emissions.

The assessment report should include the following details:

A. Detailed description of the proposed development, including:

- Identify any on-site sources of pollutants;
- Overview of the expected traffic changes;
- The sensitivity of the area in terms of objective concentrations;
- Local receptors likely to be exposed; and
- Pollutants to be considered and those scoped out of the process.

B. The relevant planning and other policy context for the assessment.

C. Description of the relevant air quality standards and objectives.

D. The basis for determining significance of effects arising from the impacts.

E. The assessment method details including model, input data and assumptions:

For traffic assessment;

- Traffic data used for the assessment;

- Emission data source;
- Meteorological data source and representation of area;
- Baseline pollutant concentration including any monitoring undertaken;
- Background pollutant concentration;
- Choice of base year;
- Basis for NOx:NO_2 calculations;
- A modelling sensitivity test for future emissions with and without reductions;

For point source assessments:

- Type of plant;
- Source of emission data and emission assumptions;
- Stack parameters – height, diameter, emission velocity and exit temperature;
- Meteorological data source and representation of area;
- Baseline pollutant concentrations;
- Background pollutant concentrations;
- Choice of baseline year;
- Basis for deriving NO_2 from NOx.

F. Model verification for all traffic modelling following Defra guidance**Error! Bookmark not defined.**:

G. Identification of sensitive locations:

H. Description of baseline conditions:

I. Assessment of impacts:

- Comparisons between results of modelling the ‘with development’ scenario and ‘no development’ conditions;
- Descriptions of the impacts at the individual receptors should be provided;
- Comment on the sensitivity of the results to input choices

J. Description of demolition/construction phase impacts:

K. Cumulative impacts and effects:

L. Mitigation measures:

M. Summary of the assessment results:

- Impacts during the construction phase of the development (usually on dust soiling and PM10 concentrations);
- Impacts on existing receptors during operation (usually on concentrations of nitrogen dioxide, PM10 and PM2.5);
- Impacts of existing sources on new receptors, particularly where new receptors are being introduced into an area of high pollution;
- Any exceedances of the air quality objectives arising as a result of the development, or any worsening of a current breach (including the geographical extent);
- Whether the development will compromise or render inoperative the measures within an Air Quality Action Plan, where the development affects an AQMA;
- The significance of the effect of any impacts identified; and
- Any apparent conflicts with planning policy.

Model verification involves a comparison of the predicted versus measured concentrations, and allows an adjustment to be made to account for systematic errors. Such errors may include traffic flow uncertainties, vehicle emission estimates and estimated background concentrations. Model verification will be important, especially where predicted concentrations are close to the objective and should be based on the most appropriate available.

Air Quality Monitoring

In some case it will be appropriate to carry out a short period of air quality monitoring as part of the assessment work. This will help where new exposure is proposed in a

location with complex road layout and/or topography, which will be difficult to model or where no data is available to verify the model. Monitoring should be undertaken for a minimum of six months using agreed techniques and locations with any adjustments made following Defra technical guidance[Error! Bookmark not defined.].

Magnitudes of Change within an AQMA

Contrary to the values given in the EPUK document 'Development Control: Planning for Air Quality,' This authority considers 0.4 µg/m3 to be a substantial change and the following revised table must be used;

Magnitude of Change Annual Mean

Large ≥1.0 µg/m3

Medium 0.6 – 0.99 µg/m3

Small 0.3 – 0.59 µg/m3

Imperceptible 0 – 0.29 µg/m3

Informative on AQA modelling

The applicant shall be aware of the following:

- ADMS-Roads output files must be provided to the local authority on validation of the planning application.
- AQ modelling must be based transport related inputs which have been approved by the local authority's Transport Assessment team.
- It is essential that junctions and heavily congested roads are modelled accurately and this is reflected in the choice of relevant node spacing and vehicle speed inputs.
- Where under predictions occur, nodes must be scrutinised and where necessary vehicle speeds adjusted to reflect queuing.
- It is the responsibility of the applicant to ensure that their appointed consultants' modelling verification is robust and adjustment factors clearly explained and justified, calculations and graphs must be provided at validation.
- Margin of error must not exceed 4 (refer to LAQM guidance as best practice).
- A cumulative assessment of major committed developments in the area must be incorporated into the modelling.

- Any other scenarios should be considered which are relevant to this site.

Assessment of the Air Quality Impacts of Construction

Guidance published by the IAQM[Error! Bookmark not defined.] sets out the methodology for assessing the impacts of air quality from the construction phase of any development.

The guidance, produced in consultation with the construction industry, considers the potential for dust emissions from the following activities:

- Demolition
- Earthworks (soil stripping, ground levelling, excavation)
- Construction, and
- Track out (the transportation of soil from the site onto public roads)

For each of these activities, the guidance considers three separate dust effects:

- Annoyance due to dust soiling;
- Harm to ecological receptors; and
- The risk of human effects due to a significant increase in exposure to PM_{10}

The methodology takes into account the scale (classed as small, medium, large) to which the above effects are likely to be generated and the distance of the closest receptors in determining the significance of effects arising from construction.

Appendix 3: Valuing Impacts on Air Quality for Type 3 Mitigation Measures

Emissions Assessment and Mitigation Calculation

For development schemes that have the potential for a Large detrimental impact on air quality, this guidance specifies an assessment procedure to evaluate the likely change in relevant concentrations and emissions arising from the scheme using the guidance produced by HM Treasury and Defra.

Two approaches are used to value changes in air quality, dependent on the nature of the change. They are:

- the ***impact pathway approach***, which is used in the majority of instances to value the consequences of changes in air quality such as on health, crops and buildings; and
- the ***abatement cost approach***, which is used in the limited instances where the change in air quality is likely to affect compliance with a legally binding obligation (whether causing, removing or changing the extent of non-compliance).

Chart 1.A (over) illustrates how to identify the appropriate approach.

The *abatement cost approach*[29] is relevant for the minority of situations where the breach of legally binding obligations is an issue. In such instances, it is still only those changes in air quality in excess of the relevant obligation that should be valued using this approach. Changes below the obligation should be valued using the *impact pathway approach*.

The *impact pathway approach* (I-PA) is the central methodology for appraisal. It values the air quality impacts of proposed decisions by estimating how changes in the

[29] Air Quality Economic Analysis | GOV.UK

ambient concentrations of air pollutants affect a range of health and environmental outcomes.

Full I-PA modelling is therefore quite resource and time intensive, requiring the estimation of emissions, dispersion, population exposure and outcomes. ***Damage costs*** have been developed to enable proportionate analysis when assessing the scale of air quality impacts where they are less significant. They are derived from the I-PA methodology to offer approximations of the value using representative modelling. The full I-PA uses bespoke analysis to provide a fuller assessment, suitable for cases where air quality impacts are significant. (See Appendix 2 Air Quality Assessment).

When total air quality impacts are estimated to be <u>less than</u> £50 million (in present value terms) it is recommended that *Damage Costs* are used. Where total air quality impacts are estimated to be in excess of £50 million a full *impact pathway assessment* should be considered in consultation with Defra.

It is considered that the damage cost approach will be sufficient in the majority of cases; thus the remaining of this Appendix will concentrate on this method of impact assessment.

Damage Costs Calculation

As part of the assessment procedure a simple calculation is proposed to allow the quantification of any emission changes – the pollution impact of a scheme can then be monetised using the pollutant damage costs (per tonne) specified by the Defra Inter-Governmental Department on Costs and Benefits (IGCB)[30].

Taking into account Type 1 and 2 Mitigation Measures built into the scheme

The emissions calculator or toolkit (below) provides a basic emission calculation; however, the proposal should already include some mitigation measures e.g. alternative fuels or technology (LPG, EV etc.), and these need to be taken into

[30] Air Quality Economic Analysis | GOV.UK

account during the damage costs calculation. The “advanced options” within the toolkit can accommodate inputs for alternative fuels.

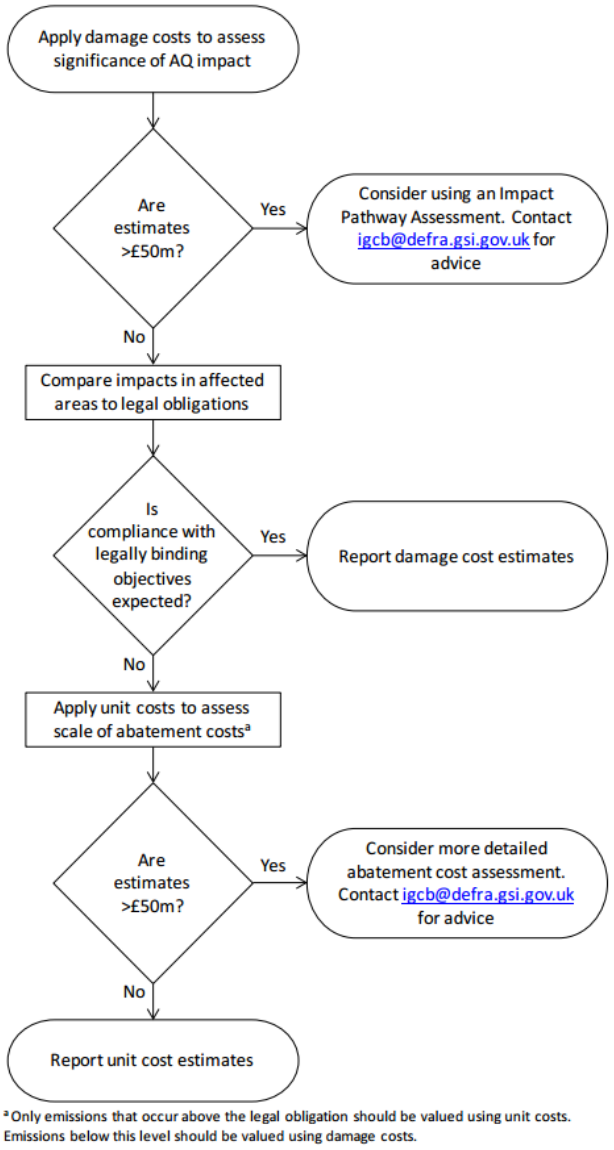


Figure 1: Overview of air quality valuation methodologies[31]

Calculating Emissions

The emissions calculator provides a calculation to determine the amount of pollutant emissions a development is likely to produce. This in turn, by multiplying the damage

[31] HM Treasury and Department for Environment, Food and Rural Affairs (Defra)-.*Valuing impacts on air quality: Supplementary Green Book guidance* (May 2013) Available at Air Quality Green Book | GOV.UK

cost for the key pollutants (PM_{10} and NOx see below), determines the amount (value) of mitigation that is expected to be spent on measures to mitigation those impacts.

The calculation uses the most current Defra Emissions Factor Toolkit[32] (EFT) to estimate the additional pollutant emissions from a proposed development. This will provide the relevant pollutant emissions outputs for the mitigation calculation, which is then multiplied to provide an exposure cost value. This value is used for costing the required emissions mitigation for the development (Example shown in Figure 6 below).

The emissions assessment and corresponding mitigation calculation follows this process:

1. An emissions assessment calculates additional trips[33, 34] generated by the development.

2. The emissions are calculated for pollutants of concern (NOx & PM_{10})

3. Using Defra IGCB Air Quality Damage Costs[19] for the specific pollutant emissions, the calculation then provides a resultant damage cost calculation.

4. The emissions total is then multiplied x 5, to provide a 5 year exposure cost value i.e.

5. The resulting 5-year exposure cost value, is the value that is to be used to implement mitigation measures within the development.

Example EFT Output = 32.55 kg/annum (NOx) & 3.795 kg/annum (PM)

[32] Defra Emissions Factor Toolkit: LAQM Emissions Factor Toolkit | GOV.UK
[33] Trip rates can be sourced from transport assessment or local authority/transport authority.
[34] Trip length uses the National Travel Survey:2011 - UK average = 7.1miles/10km National Travel Survey Statistics | GOV.UK

= 0.0325 tonnes/annum (NOx) & and 0.003795 tonnes/annum (PM10)

X £25,252/tonne (NOx) + £58,125/tonne (PM10)

= £820.69 + £220.58

X 5 (years)

= £4,103.45 + £1,102.90

Total = £5,206.35

Figure 2: Example calculation based on a development with 10 domestic properties

Type 3 Mitigation/Compensation Measures

By establishing the damage costs arising from development scheme emission changes it is possible to assess any additional mitigation or compensation that is required to make the scheme acceptable. A suite of mitigation/compensation measures termed Type 3 mitigation is shown in Table 10.

Table 1: Examples of Type 3 Additional Mitigation and/or Compensation Required for Scheme Acceptability

Mitigation/ Compensation Options	• On-street EV recharging. • Contribution to low emission vehicle refuelling infrastructure. • Car clubs. • Low emission bus service provision. • Low emission waste collection services. • Bike/e-bike hire schemes. • Bike infrastructure. • Contribution to renewable fuel and energy generation projects. • Incentives for the take-up of low emission vehicle technologies and fuels. • Air Quality Monitoring programmes. • Other sustainable transport provision as appropriate to the development. • Contribution towards other public transport improvements.

Note: Where Type 3 mitigation is required, the planning authority and developer will agree measures that are appropriate and in scale and kind to the development. Such measures may be taken forward by condition, where possible, or through the use of a Section 106 Agreement.

The planning authority will need to take into account of any Type 3 mitigation measures that are included on a Community Infrastructure Levy (CIL) list.

The list in Table 8 is not exhaustive and further options may be suggested where authorities feel it is appropriate, depending on the scale of development and air quality issues within an area.

The mitigation options selected for a development should be relevant and appropriate to:

- Any local policies including Air Quality Action Plans, which may determine the mitigation priorities for a scheme that the local authority may wish to see be incorporated within a particular scheme.

- Any local air quality concerns; to assist in the remediation of potential cumulative air pollution impacts of the development on the local community.

- The type, size and activity of the development.

Appendix 4: Dust Control Mitigation Measures

1. Site layout

When planning construction works developers shall:

- Locate machinery and dust generating activities away from off-site sensitive receptors.
- Create a physical distance and/or barriers between dust/emission generating activities and receptors.
- Install solid screens/barriers around dust generating activities and stockpiles. These should be as high as the
- relevant stockpiles in question as a minimum.
- Cover, seed, fix, or compact and profile stockpiles to prevent wind whipping.
- Remove loose small grain materials as soon as possible.
- Site maintenance
- Developers should keep the construction sites in good order. Measures required include;
- The site or construction area should be bunded to prevent runoff. Runoff and mud should be contained and managed as it leads to re-suspended dust on haul routes and highways when it dries and pollutes local waterways and sewers when washed off.
- Hoardings, fencing, barriers and scaffolding should be regularly cleaned using wet methods to prevent re-suspension of particulate matter. Developers should collect used water and maximise the re-use of recycled and non-potable water.
- Regular checks for soiling due to dust of buildings within 100 m of the site boundary should be carried out with cleaning, using wet methods, carried out where and when visible dust deposition can be seen to be occurring.
- Require a change of shoes and clothes by staff and visitors before going off-site.
- Provide personal cleaning facilities such as showers and boot cleaners on site.
- Hard surface all major haul routes, inspect and repair them regularly and keep clean from debris at all times.

2. Transport to site

To reduce dust and particulates associated with vehicles, e.g. exhaust emissions, re-suspension or wind blow dust, all developers should carry out the following controls:

- All vehicles should switch off engines when not in use – no idling vehicles.
- Fixed wheel and/or vehicle washing on leaving site e.g. drive through, under vehicle jets or hand held jet washers.
- All loads entering and leaving site to be covered.
- Hard surfacing and effective wet cleaning of haul routes.
- Enforced a 5mph speed limit on site.
- Use fixed or mobile irrigators or sprinkler systems to effectively damp internal haul routes and external roads up to 100m from site entrance(s) a minimum of once a day.

3. Idling Impact

During the peak excavation works, a major development may require 6 muck away vehicles an hour. If each vehicle is stationed for 5 minutes and left idling, this would equate to 30mins per hour and over the 10 hour working day would equate to 5 hours of unnecessary vehicle exhaust fumes being emitted per day. Enforcing no engine idling will also save money on fuel costs.

The site shall be managed so that vehicles do not have to wait to park safely. However, should vehicles have to wait they should not idle. If a vehicle is stationary for more than a minute, turning off the engine is required by The Road Traffic (Vehicle Emissions) (Fixed Penalty) (England) Regulations 2002.

4. Site activities

4.1. Diesel or petrol generators

Even modern diesel or petrol powered plant items emit higher levels of PM and NOx than electric equivalents. Therefore, wherever possible, renewable, mains or battery powered plant items should be used.

4.2. Cutting, grinding and sawing

Cutting, grinding and sawing should not be conducted on-site and pre-fabricated, pre-cut materials and modules should be brought to site. In cases where on site cutting, grinding and sawing must take place on site this must be done using equipment fitted with functional dust arrestment/suppression. Alternatively a water efficient spray over the material as it is being cut will greatly reduce the amount of dust generated. http://www.hse.gov.uk/pubns/cis36.pdf

When scrabbling best practice is to: pre-wet work surfaces; screen off work areas; and wet sweep away all arisings.

4.3. Mobile crushing plant

Crushing is an inherently noisy and dusty activity. Developers shall formally notify the local authority if a crusher is to be used on site. Mobile crushing plants are authorised as Local Authority Pollution Prevention & Control (LAPPC) processes under the Environmental Protection Act 1990 by the authority where they are registered (rather than the authority in whose area in which they are used). This is required even if they are only on site for a few days.

Developers must keep a copy of the LAPPC permit on-site and adhere to the conditions of use at all times. It is mandatory to use best available techniques in accordance with the relevant Process Guidance note at all times.

Crushing plant and the discharge from crushers and grading screens should be enclosed in a temporary shed and have a fine spray of water fed into the top of the crusher hopper at all times whilst in use.

4.4. Concrete batching

As for mobile crushing plants, construction sites with concrete batching plants will likely be categorised as medium or high risk. Developers should treat such plant as a permitted LAPPC process under the Environmental Protection Act 1990, even if temporary, and employ the following best practice: Notify the local authority a concrete batcher is to be used on site; use best available techniques identified in the Process Guidance note; and carry out these processes in an enclosure, wherever possible.

4.5. Chutes, conveyors and skips

Skips, chutes and conveyors should be completely covered or enclosed to ensure that dust does not escape. Drop heights should be minimised to control the fall of materials.

5. Damping down

Developers will need to wash or dampen haul routes both within and outside the site. This is particularly important for sites close to residential properties or other sensitive receptors and during dry or breezy conditions. Developers should consider the environmental and economic benefits of using a groundwater source on site, as opposed to bringing drinking quality water onto site for the purpose of dust suppression. Where possible the source of water should be sustainable and the re-use be optimised.

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- Clean road edges and pavements using wet cleaning methods.
- Use wet cleaning methods and mechanical road sweepers on all roads within 100m of the site entrance at least once a day.
- Consider using fixed or mobile sprinkler or irrigator systems.
- Where possible, use a sustainable source of water.
- Contact the Environment Agency for advice regarding recycling any collected material or handling run-off water according to their legal requirements.
- Provide hard-standing areas for vehicles and inspect and clean these areas daily.
- Stockpiles and storage mounds

Developers should avoid long-term stockpiles on site unless they are designed and planned to perform the function of visual or noise screening. If they are necessary, the following measures should be in place:

- Make sure that stockpiles exist for the shortest possible time.
- Do not build steep sided stockpiles or mounds or those that have sharp changes in shape. Profile to minimise wind whip.
- Whenever possible site stockpiles away from the site boundary, sensitive receptors, watercourses and surface drains.

- Wherever possible, enclose stockpiles, keep them securely sheeted or employ irrigators.
- When siting stockpiles take into account the predominant wind direction to reduce the likelihood of affecting off-site receptors.
- Seed, re-vegetate or turf long term stockpiles to stabilise surfaces or use surface binding agents that have been approved by the Environment Agency.
- Re-use hardcore material to avoid unnecessary vehicle trips.
- Erect fences or use windbreaks such as trees, hedges and earth-banks of similar height and size to the stockpile to act as wind barriers and keep these clean using agreed wet methods regularly.
- Store fine or powdery material (under 3mm in diameter) inside buildings or enclosures.

6. Sand Blasting

The work area should be close-sheeted to reduce dust nuisance from grit. Routine checking is required to ensure that the sheeting remains sound and sealed during the operation. Particular attention should also be given to the working platform to ensure that it is properly sheeted and sealed to contain dust.
http://www.hse.gov.uk/pubns/guidance/cn7.pdf

- Non-siliceous grit should be used to prevent long-term irreversible lung damage from silica dust to workers.
- Adequate PPE and sheeting should be provided when sand blasting any structure painted with lead based paint.
- Please refer to the Control of Lead at Work Regulations 2002. http://www.hse.gov.uk/pUbns/priced/l132.pdf

In cases where water is used for large scale cleaning and blasting projects the requirements of Environment Agency and Thames Water Utilities Ltd must be complied with.

All grit must be prevented from falling into or ending up in rivers or watercourses. Please refer to the Water Resources Act 1991.

7. Fumes

The contractor shall take all necessary precautions to prevent the occurrence of smoke emissions or fumes from site plant or stored fuel oils to prevent the emissions or fumes drifting off-site. Plant shall be well maintained and measures taken to ensure that it is throttled down or turned off when not in use.

8. PPG6

PPG6 ‘Construction and demolition sites: prevent pollution’ guidance document was withdrawn on 14 December 2015 however, it can still be referenced as a good guide to pollution control; PPG6 Construction and Demolitions Sites | GOV.UK

Acknowledgement: London Borough of Southwark