

West Midlands Combined Authority Air Quality Framework Reference Document

November 2023

Awaiting approval from WMCA Board on 17th November



West Midlands
Combined Authority

WEST MIDLANDS
Greener Together





West Midlands
Combined Authority



Transport for
West Midlands



Birmingham
City Council



Coventry City Council



Metropolitan Borough Council



Sandwell
Metropolitan Borough Council



Solihull

METROPOLITAN
BOROUGH COUNCIL



Walsall Council

CITY OF
WOLVERHAMPTON
COUNCIL



Executive Summary

Our vision: *The West Midlands will have air quality that is safe for all people, no matter where you live in the region, resulting in significantly improved public health and environmental outcomes.*

In 2022, air pollution was the subject of the Chief Medical Officer's annual report. In speaking about this report, Sir Chris Whitty said, 'Everyone is affected by air pollution, and it is everyone's problem'. This Air Quality Framework aims to establish what the West Midlands Combined Authority (WMCA), working with its partners, can do to deliver cleaner air across the region. The overall aim will be to reduce absolute and unequal exposure to poor air quality, giving everyone better air to breathe and improving health outcomes.

The ambition developed here is not a strategy, but a Framework for delivery, supported by a near-term implementation plan. We know what needs to be done, and now have a prioritised list of actions to take forward. Importantly, we are not beginning from a standing start – local authorities and Transport for West Midlands (TfWM) have been delivering activity – but we know we need to accelerate plans to create a healthy environment for all communities across the region. Our first Framework Implementation Plan has been produced in accordance with this document to summarise which of the Framework 'options' are priority measures that will be progressed/delivered between 2024 and 2026.

Until recently, the biggest challenge for UK government has been in tackling exceedances of legal limits for nitrogen dioxide (NO₂), which are primarily associated with and local to transport infrastructure – especially along busy roads with adjacent resident population. Consequently, measures to improve air quality have tended to focus on reducing emissions of and exposure to NO₂ pollution within local authority areas. However, with the Environment Act (2021) there is now the additional focus on particulate matter, which has sources beyond transport, and which requires a different approach to address it. This is important for the WMCA as WM-Air researchers estimate that annually in the West Midlands, up to 2,300 premature deaths in the region arise from long-term exposure to particulate matter. This plan covers both NO₂ and particulate matter, which goes beyond individual local authority areas, can be most effective as particulate pollution tends to spread further geographically than NO₂.

Reflecting the range of approaches that will need to be taken (145 options have been appraised), this Framework has grouped the appraised options into the following categories:

- Engagement and behaviour change;
- Domestic emissions and indoor air quality;
- Transport;
- Natural and built environment;
- Commercial, industrial and agriculture;
- Public health;
- Planning, policy, governance, and mechanisms for change;
- Monitoring and digital; and
- Climate/net zero considerations

Each of the options has undergone appraisal against the following criteria:

- Health outcomes, including direct improvement to human health and reduced health inequalities.
- Spatial impact, including whether a regional approach brings benefit.
- Alignment with local and national policy.
- Feasibility of implementation, timescales and cost'?
- Co-benefits – do the measures have any additional environmental, social or economic benefit?

This enables a clear focus for actions, funding bids, investment and any behaviour change or communication campaigns, as examples.

Whilst this document has been produced by the WMCA, working with its constituent local authorities, it will require a collaborative approach to enable delivery of air quality benefits for all. This will include local and regional government, but also the commitment of local businesses and communities. Financial investment will be required to implement, and then sustain, some of the options identified. As much air pollution is both produced and experienced locally and regionally, any emissions reduction (by industry, transport, and housing) as a result of the implementation of the Framework will have immediate local and regional benefits.

We have begun our road to delivery through a Department for Environment, Food and Rural Affairs (DEFRA) funded air quality grant and we look to continue working with our regional partners, local businesses and communities as the Framework is delivered.

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1. Introduction

Air pollution has significant local and regional impacts on the quality of health and the environment. Notably, WM-Air researchers at the University of Birmingham estimate that annually in the West Midlands, up to 2,300 early deaths are attributable to long term exposure to fine particulate matter in the air that is less than 2.5 micrometres (μm) in diameter (commonly referred to as $\text{PM}_{2.5}$). In recognition of this, the West Midlands Combined Authority (WMCA), in conjunction with the WM-Air project, prepared an Air Quality Options paper¹, which was presented to the WMCA Board in February 2022. That paper identified priority issues linked to air pollution in the region, including two significant issues:

- The inequality of exposure to air pollution and, as a consequence, the disproportionate health impacts felt in some communities across the region.
- The significance of particulate matter (PM_{10} and $\text{PM}_{2.5}$), in air pollution within the West Midlands and the need to act beyond measures linked to transport and nitrogen dioxide (NO_2), in order to address that.

An initial overview of actions was identified, but there was recognition that this needed to be translated into an Air Quality Framework (herein referred to as the 'Framework') comprising a list of 'options' formally assessed against criteria including health outcomes, feasibility of implementation, cost, and timescales, as well as the likelihood to deliver / magnitude of air quality improvements.

Understanding the different roles of government and policymakers in addressing air quality is critical in ensuring that any interventions put in place are as effective as possible. The Framework seeks to explore where we can collaborate across the WMCA region to deliver more, at scale, and improve the environment and health outcomes for people living across the region. Our vision is that:

The West Midlands will have air quality that is safe for all people, no matter where you live in the region, resulting in significantly improved public health and environmental outcomes.

In developing the Framework, we have worked closely with our local authorities. This is critical for the successful delivery of the options identified in this document as much of the necessary responsibility, for example for planning, sits at a local level. However, that does not detract from the advantages of collaborating across regional geography to develop collective approaches. This document outlines the current UK, regional and local context for the successful delivery of the Framework.

Additionally, air quality was the first module for the WMCA's Greener Together Citizens' Panel², which, alongside working with organisations and groups with a responsibility for and/or an interest in air quality, has shaped the Framework.

A Framework Implementation Plan (FIP) has been developed in accordance with this document to summarise priority work packages and measures that will be progressed/delivered between 2024 and 2026. The implementation of these priority measures will see progress towards WMCA's aforementioned vision. This will not replace, but rather will complement, the existing activity that is being delivered by both Transport for West Midlands (TfWM) and the region's local authorities to support improvements in air quality.

Building on the two significant issues identified in the Air Quality Options paper and as stated above, Section 3 provides an overview of the scale of the challenge that exists in the West Midlands linked to air pollution. In particular, the differences in approach in tackling NO_2 and $\text{PM}_{2.5}$ as the two main pollutants of concern. Plans from local authorities and TfWM are largely focused on tackling NO_2 , as mandated by Government. However, modelling undertaken by WM-Air at the University of Birmingham indicates the importance of tackling particulate matter (especially $\text{PM}_{2.5}$) not least because it lives longer in the atmosphere and its impact is therefore felt further from the source, making a regional approach potentially advantageous. Further details on the key pollutants within the West Midlands and information relevant to constituent local authorities can be found in [Appendix B](#).

The options that have been considered in the Framework are extensive; we have identified 145 possible options in total for implementation, which have been grouped into nine categories (see [Section 4](#)).

Addressing the air quality challenge effectively necessitates a collective endeavour as no one organisation has all the solutions or the ability and powers to implement them alone. Each of the options identified will therefore require collaboration with one or more partners, including people and communities across the West Midlands.

Some options will be easier to deliver than others and the collective approach will range from a desire to work together to navigate some difficult and complex issues, through to identifying significant funding or delivery. Section 5 outlines some of the key partners to delivering the improvements needed. [Appendix C](#) outlines the contributors and consultees to date.

The Framework has adopted a robust methodology to assess the potential measures as described in Section 6 (see [Appendix D](#) for additional information). The options have been broken down into nine thematic areas and Section 7 presents those that scored most highly across all categories and should therefore be the focus of near-term implementation.

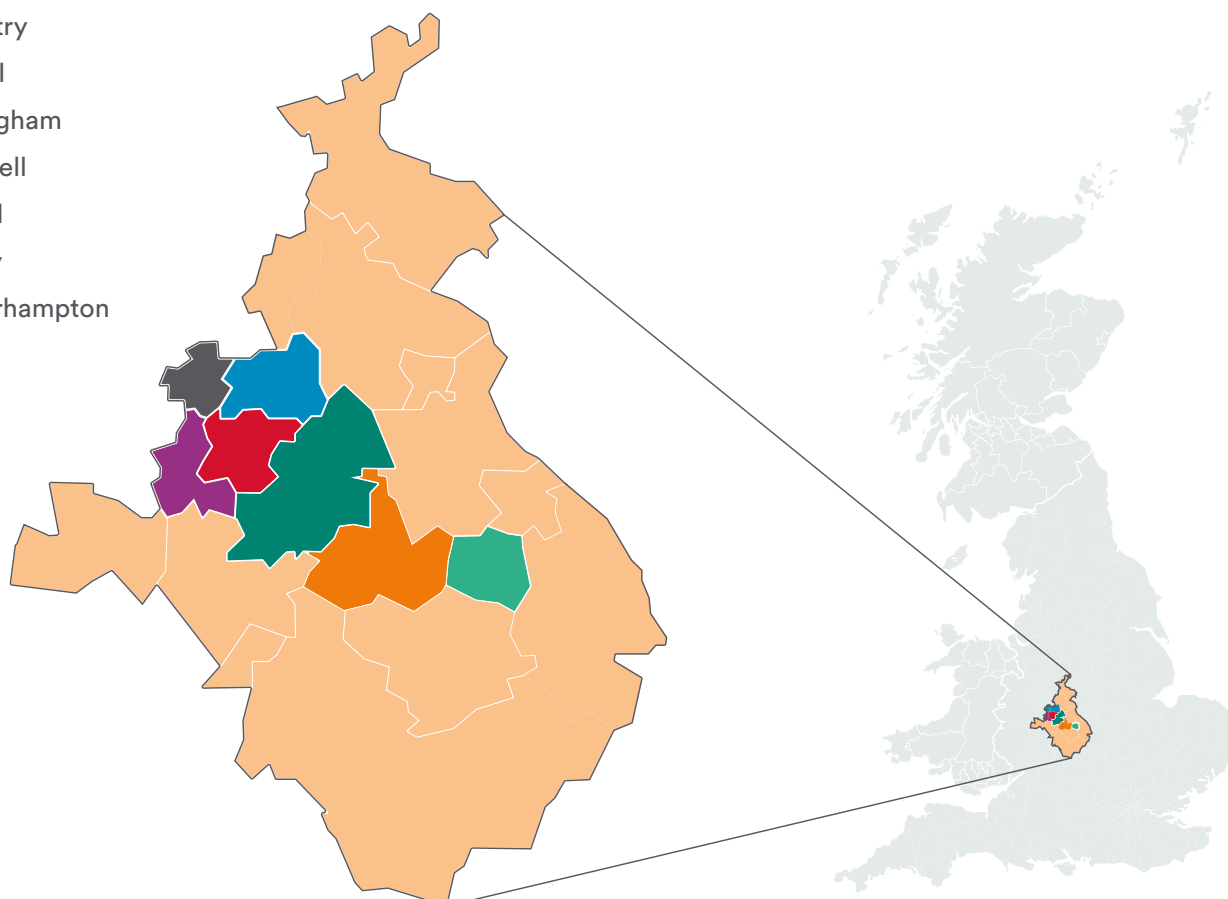
The full list of options and the detail of the assessment process can be found in [Appendix D](#). The inclusion of case study material also illustrates some of the work that is already underway across the region; we will look to build on this as we move the Framework forward and learn from the successful projects and programmes currently being delivered.

Framework Scope

The Framework, and subsequent Framework Implementation Plan, are applicable to the seven constituent local authorities and 11 non-constituent local authorities which make up the WMCA region.

Anything that can be feasibly delivered by WMCA, constituent local authorities or partners is considered within the scope of the Framework. Options which fall outside of the scope of the Framework typically are those which rely upon national government to promote or are not implementable within current powers. If we identify any further powers that would benefit air quality and public health, then they could form part of a future devolution deal. For the purposes of this work, we have focused on the role of the constituent local authorities but, as with many other environmental issues, there is scope to collaborate across different geographies. For example, the Coventry and Warwickshire Air Quality Alliance have been a stakeholder in developing the Framework.

- Coventry
- Solihull
- Birmingham
- Sandwell
- Walsall
- Dudley
- Wolverhampton



Outcomes from Implementation

The outcomes that we hope to achieve through the implementation of the Framework include, but are not limited to:



Reduced exposure to NO₂ and particulate matter (PM₁₀ and PM_{2.5}) to achieve better health outcomes for people living and working in the West Midlands.



Increased awareness amongst individuals, communities, developers, businesses, politicians, and policymakers of the need to tackle air quality in the West Midlands.



Improved monitoring, data collection and communication to local groups, especially those at risk. The resulting insights should be used to understand the impact of various policy measures. Findings can then be used to inform discussions concerning future prioritisation to address poor air quality (including soft options such as behaviour change campaigns and/or infrastructure solutions).



Increased regional and national co-working and cooperation to improve air quality and hence health outcomes in the most efficient way possible. This will build upon the work undertaken by local authorities to date, and use the lessons learned to make implementation and outcomes as effective as possible.

This Framework is a statement of intent to do better on improving air quality for the people of the West Midlands, and to create the conditions in which it is easier for people to make choices that protect their own, and others, health from poor air quality. We expect that options and opportunities will change as policy, regulation, targets and innovation allow for different approaches to tackling air quality in future, and we will build in regular review of this Framework to ensure that it remains relevant and ambitious.



2. Legislation, Policy, Strategy and Key Updates

This Section reviews existing policy and regulations, along with additional complementary work that has been published recently.

2.1 National

There are several regulatory and advisory limits on air pollutants, as well as suggested policy approaches and measures for tackling poor air quality. Relevant legislation, policy, and guidance, including technical standards already in place, are listed in this section.

Legislation

Environment Act 1995

Under Part IV of the Environment Act 1995⁴, local authorities must review and document local air quality within their area by way of staged appraisals and respond accordingly, with the aim of meeting the air quality objectives that are given in secondary legislation (outlined below). Where the objectives are not likely to be achieved, an authority is required to designate an Air Quality Management Area (AQMA). For each AQMA the local authority is required to draw up an Air Quality Action Plan (AQAP) to secure improvements in air quality and show how it intends to work towards achieving air quality standards in the future. WMCA gained concurrent duties within the Environment Act 1995 through the West Midlands Combined Authority (Functions and Amendments) Order 2017⁵ which was agreed as part of the second devolution deal for the West Midlands. Before the Order, only the constituent authorities had these duties.

Environment Act 2021

The Environment Act 2021⁶ sets a legally binding duty on the Secretary of State to bring forward air quality targets into secondary legislation; with specific regard to annual mean concentrations of PM_{2.5} in ambient air.

Schedule 11 of the Environment Act 2021 also provides amendments to the Environment Act 1995 regarding the duty of the Secretary of State to report on air quality in England as well as the functions and duties of relevant public authorities including, but not limited to, the duty of a local authority to prepare an action plan for an Air Quality Management Area “...for the purpose of securing that air quality standards and objectives are achieved...”

Under the Environment Act 2021, the Office for Environmental Protection was formed to perform the role of an objective and impartial environmental watchdog in the UK. Previously this role was held by the European Commission.



Air Quality Regulations

The Air Quality (England) Regulations 2000⁷ and the Air Quality (England) (Amendment) Regulations 2002⁸ set objectives for ambient pollutant concentrations. The Air Quality Standards Regulations 2010 (as amended)⁹, the Air Quality (Amendment of Domestic Regulations) (EU Exit) Regulations 2019¹⁰ and the Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020¹¹ set legally binding limit values for concentrations in outdoor air of major air pollutants that affect public health such as NO₂, PM₁₀ and PM_{2.5}.

The Environmental Targets (Fine Particulate Matter) (England) Regulations 2023¹² set a new annual mean concentration target and population exposure reduction target for PM_{2.5} to be achieved by the end of 2040, in accordance with the Environment Act 2021. A non-statutory interim target has also been set for 2028.

The relevant air quality standards as objectives, limit values and targets are given in **Table 2.1**.

Table 2.1: Key Ambient Air Quality Standards for England		
Pollutant	Government Objective in England (µg/m ³)	Averaging Period
Concentration Limits and Targets		
NO ₂	40, as the limit value not to be exceeded	Annual mean
	200, not to be exceeded more than 18 times a year	1-hour (hourly) mean
PM ₁₀	40, as the limit value not to be exceeded	Annual mean
	50, not to be exceeded more than 35 times a year	24-hour (daily) mean
PM _{2.5}	20, as the limit value not to be exceeded	Annual mean
	12, as an interim target concentration not to be exceeded by the end of January 2028	Annual mean
	10, as a target concentration not to be exceeded by the end of 2040	Annual mean
Exposure Reduction Targets		
PM _{2.5}	A 35% reduction in population exposure by the end of 2040, as compared with the average population exposure in the three-year baseline (2016 to 2018).	Annual mean
	A 22% reduction in population exposure by the end of January 2028, as compared with the average population exposure in the three-year baseline (2016 to 2018).	Annual mean

Strategy and Policy

Clean Air Strategy 2019

The Department for Environment, Food and Rural Affairs (DEFRA) published the Government's Clean Air Strategy in 2019¹³. This sets out measures, which aim to reduce emissions from all sources of air pollution, making air healthier to breathe, protecting nature and boosting the economy. The Strategy also provides goals to cut public exposure to airborne particulate matter, informed by the recommendations made by the World Health Organization (WHO).

UK Air Quality Strategy 2007

The Government's policy¹⁴ on air quality within the UK is set out in the Air Quality Strategy (AQS) for England, Scotland, Wales and Northern Ireland. It provides a framework for reducing air pollution in the UK to meet the air quality standards of the time.

Environmental Improvement Plan 2023

On the 31st January 2023, the UK government published its Environment Improvement Plan¹⁵ which constitutes the first review of the 25-Year Environment Plan as required under the Environment Act 2021. Of relevance to air quality within this document is the 25-Year Environmental Plan goal to achieve clean air in the UK by cutting air pollution overall, by tackling key sources of emissions and specific hotspots, and reducing ammonia (NH₃) emissions.

Under 'Goal 2 Clean Air', the Government makes the following commitments:

- *A legal target to reduce population exposure to PM_{2.5} by 35% in 2040 compared to 2018 levels, with a new interim target to reduce population exposure by 22% by the end of January 2028.*
- *Legal concentration limits for a number of other key pollutants. We already meet the majority of these limits including for sulphur dioxide (SO₂) and PM₁₀. We are working towards meeting compliance with the 40µg/m³ limit for nitrogen dioxide.*
- *A legal target to require a maximum annual mean concentration of 10 micrograms of PM_{2.5} per cubic metre (µg/m³) by 2040, with a new interim target of 12µg/m³ to be achieved by the end of January 2028.*
- *Legal emission reduction targets for five damaging pollutants by 2030 relative to 2005 levels:*
 - » *Reduce emissions of nitrogen oxides by 73%.*
 - » *Reduce emissions of SO₂ by 88%.*
 - » *Reduce emission of PM_{2.5} by 46%.*
 - » *Reduce emissions of NH₃ by 16%.*
 - » *Reduce emissions of non-methane volatile organic compounds by 39%.*

To deliver these commitments the Government has pledged a number of actions, including:

- *"Continuing to tackle domestic emissions by reducing the maximum emissions for domestic burning appliances in Smoke Control Areas and by promoting best practice in use of stoves and fireplaces."*
- *"Challenging local authorities to improve air quality more quickly by assessing their performance and use of existing powers, while supporting them with clear guidance, funding, and tools."*
- *"Facilitating the rollout of further Clean Air Zones by local councils in areas which are in breach of air quality statutory limits, with further zones and other non-clean air zone measures as required."*
- *"Re-aligning regional air quality zones in line with local government boundaries to drive effective coordinated action."*
- *"Reducing NH₃ emissions by using incentives in new farming schemes, while considering expanding environmental permitting conditions to dairy and intensive beef farms."*
- *"Continuing to support the move away from petrol and diesel cars."*

National Planning Policy Framework

The Government's overall planning policies for England are described in the National Planning Policy Framework (NPPF)¹⁶. The core underpinning principle of the NPPF is the presumption in favour of sustainable development, defined as "... meeting the needs of the present without compromising the ability of future generations to meet their own needs".

One of the three overarching objectives of the NPPF is that the planning system should "... protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution and mitigating and adapting to climate change, including moving to a low carbon economy."

In relation to air quality, the following paragraphs in the document are relevant:

- Paragraph 185, states "Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development..."
- Paragraph 186, which states "Planning policies and 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. 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. 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."

Significant Government Reporting

Chief Medical Officer's Annual Report 2022

In December 2022, the Chief Medical Officer's 2022 annual report¹⁷ was published and focused on air pollution. It included various chapters ranging from the impacts of air pollution on health, trends, solutions and research and innovation. The report raises the profile of air quality work within the public health sector and shows the scale of the interventions required to meet the targets within the Environment Act 2021.



2.2 World Health Organisation Global Air Quality Guidelines

WHO set out global air quality guideline values in a 2021 report¹⁸ which are based on up-to-date evidence on the harm from specific pollutants, including NO₂ and PM_{2.5}. **Table 2.2** shows key WHO air quality guideline values, which are more stringent than those legally required in England.

The WHO guideline values are not legally binding, and they are guidelines for counties that wish to adopt them. However, the consensus within the scientific community is that there is no safe level for PM_{2.5} concentrations and therefore the aspiration to minimise impacts on health should be to reduce levels as close to the WHO guideline value where possible. As such, more local authorities and regions are wishing to adopt the 10µg/m³ PM_{2.5} threshold in advance of the Government's target date of 2040. This includes Walsall who in July 2022 published an interim position statement¹⁹ outlining how it would incorporate more stringent objectives into planning decisions.

In addition to the guideline values themselves, the short-term averaging period values differ. The WHO averaging period for NO₂ is 24-hours, whilst the UK averaging period is 1-hour. There is no equivalent 24-hour objective in the UK for PM_{2.5}. The WHO guideline for 24-mean PM₁₀ allows for three to four exceedance days per year, compared to no more than 18 in England

Table 2.2: Key WHO Air Quality Guideline Values		
Pollutant	WHO Air Quality Guideline Values (µg/m ³)	Averaging Period
NO ₂	10, as a limit value not to be exceeded	Annual mean
	25, not to be exceeded more than 3 to 4 times a year	24-hour (daily) mean
PM ₁₀	15, as a limit value not to be exceeded	Annual mean
	45, not to be exceeded more than 3 to 4 times a year	24-hour (daily) mean
PM _{2.5}	5, as a limit value not to be exceeded	Annual mean
	15, not to be exceeded more than 3 to 4 times a year	24-hour (daily) mean

2.3 Regional

The WMCA does not act within any formal air quality role currently, however there are many benefits in leading and assisting on air quality matters for the region. Air quality is very much a national issue, however there are significant benefits to addressing air quality on a regional level to both complement existing actions, and enable new ones which aren't potentially feasible on a local level. Such benefits include:

- Consistency and co-working - where there are aspects of air quality policy which would benefit from a more consistent approach. This could include monitoring processes, guidance, behaviour change and communications. Consistency has the potential to make addressing air quality more effective in terms of results, resourcing, and finances.
- Economies of Scale - with more co-working on air quality, economies of scale can be leveraged alongside more streamlined procurement processes. This will ensure that the region gets more value for money when it comes to buying services linked to improving air quality.
- Opportunities through devolution – understanding where powers and responsibilities could be helpfully devolved to enable effective delivery, subject to those powers coming with resources to ensure capacity.
- Data aggregation – the WMCA can aggregate data from the local/ regional air quality monitoring from across the region.
- Tackling pollutants (such as PM_{2.5}) that live longer in the atmosphere and therefore have less of a local footprint than that of NO₂, for example.
- TfWM has a specific role as the West Midlands local transport authority (LTA) and therefore an important function in reducing air pollution in relation to urban transport. The Local Transport Plan (LTP) is a key strategic (and statutory) document in this regard.
- Ability to incorporate air quality considerations into additional regional programmes where relevant, for example air quality into Net Zero Neighbourhoods and other retrofit programmes, or into transport infrastructure projects

2.4 Local

Local Air Quality Management

Local authorities have Local Air Quality Management (LAQM) duties under the Environment Act 1995 and as amended by the Environment Act 2021. LAQM is defined as²⁰:

“... the statutory process by which local authorities monitor, assess and take action to improve local air quality. Where a local authority identifies areas of non-compliance with the air quality objectives, and there is relevant public exposure, there remains a statutory need to declare the geographic extent of non-compliance as an Air Quality Management Area (AQMA) and to draw up an action plan detailing remedial measures to address the problem.”

The LAQM regime requires every district and unitary authority to review and assess air quality in their area on a regular basis and present the findings in an Annual Status Report (ASR). The ASRs will identify if objectives have been or, or will be, achieved at relevant locations by the required date. If an AQMA is designated on the back of an ASR, an Action Plan should be prepared within 12 months following the declaration of the AQMA.

Air Quality Action Plans and Clean Air Strategies

Current air quality policy at a **local authority level** has tended to focus on transport interventions and is driven by the need to meet mandatory concentration limits for pollutants. As a result, the AQAPs and Clean Air Strategies (CAS) described below prioritise actions related to reducing NO₂ rather than particulate matter. However, new plans, such as those from 2020 onwards, do include more of a focus on particulate matter. The published plans and strategies from the constituent local authorities include:

- **Birmingham City Council/Brum Breathes Clean Air Strategy - Birmingham's Journey to Clean Air 2022²¹** (2022) includes eight key actions to improve air quality, which include behaviour change, access to data and reducing specific emissions from non-road mobile machinery.
- **Birmingham City Council Air Quality Action Plan²²** (2021 – 2026) includes the implementation of the Clean Air Zone and other mitigation measures as well as exploring the impact of transport and demand reduction. There is also some work on controlling industrial and domestic emissions and behaviour change.
- **Sandwell MBC Air Quality Action Plan²³** (2020 – 2025) focuses on several transport measures to improve air quality, as well as exploring the role of planning and behaviour change campaigns. It highlights the need for the local authority to lead by example.
- **Coventry City Council Local Air Quality Plan²⁴** (approved by the Government in 2020) is focused on transport and behaviour change around travel, including promoting EVs, decarbonising the public transport network, real-time air quality monitoring linked to dynamic traffic management, improvements to the road network to tackle congestion, construction of segregated cycle routes and initiatives supporting behaviour change and active travel.
- **Solihull MBC Clean Air Strategy²⁵ (2019 – 2024)** focuses on a range of different behaviour change and transport interventions, including schools' programmes, electrification of transport, provision of infrastructure for electric vehicles and modal shift. Solihull's plan is different from the other local authorities as the only constituent authority not mandated (by DEFRA) to produce an Air Quality Action Plan.
- **Dudley MBC Air Quality Plan²⁶** (2011) includes the following approaches to tackling air quality: behaviour change, addressing school travel, improvement of public transport, leading by example with the council's fleet and building air quality into planning.
- **Walsall Council's Air Quality Action Plan²⁷** (2009) addresses the need to reduce vehicle emissions and traffic, as well as promote public transport and active travel. It also looks to address both road and rail infrastructure.
- **Wolverhampton City Council's Air Quality Action Plan** (2006) addresses the reduction of emissions from transport, industry and commerce, improving public transport and active travel options as well as reducing emissions and traffic volumes, and infrastructure improvements.

The ASRs provide updates from the local authorities on progress in improving local air quality. A summary of the ASRs and AQAP and the actions which are relevant to the Framework are outlined in **Table B.1** within [Appendix B](#).

Smoke Control Areas

Under the Clean Air Act 1993, as amended by the Environment Act 2021, within a smoke control area people and businesses must not:

- Emit a substantial amount of smoke from a chimney.
- Buy or sell unauthorised fuel for use in a smoke control area unless it is used in an ‘exempt’ appliance (i.e., any appliances which are approved for use in smoke control areas).

Where local authorities determine that a smoke emission is substantial, they can take enforcement action. In addition to enforcement, smoke control areas can be seen as a vital tool to change behaviour by raising awareness of the health effects of solid fuel combustion and general air quality issues.

A breakdown of the smoke control areas active within the seven constituent local authorities can be found in **Table B.1** within [Appendix B](#).

The smoke control area rules are separate from statutory nuisance under Part 3 of the Environment Act 1990. Under this legislation, if the smoke emissions are harmful to health or a nuisance, then an abatement notice can be served, and any further breaches would constitute a criminal offence.

Clean Air Zones

Clean Air Zones (CAZs), or Low Emission Zones (LEZs) are designated areas where policies are applied to deal with NO₂ concentrations that are forecasted to exceed the legal limits. Typically, the areas are determined and operated by local authorities, but in some cases, combined authorities can designate a CAZ. WMCA has the power to create low-emission and clean air zones with the consent of the affected highway authority(s). Where there are exceedances of the NO₂ legal limits, the Government has directed the relevant authorities to consider whether the establishment of a clean air zone would deliver a way to meet air quality targets in the shortest possible time. As such, it is possible to demonstrate that other approaches may be better at meeting air quality targets in the shortest possible time and in these cases, a CAZ would not be required.

The zones primarily reduce vehicle emissions, through the charging of non-compliant vehicles that enter the zone. The restrictions differ depending on the ‘class’ of the zone, but the most stringent is a ‘Class D’ zone, which is in place in Birmingham. A Class D CAZ deals with non-compliant buses, coaches, taxis, private hire vehicles, heavy goods vehicles (HGVs), light goods vehicles (LGVs) and cars. It is expected that the current vehicle exemption standards will be in place until at least 2025 and after this time, it is possible that additional vehicles are removed from the list of exempt vehicles.

The current legislation does not cover PM_{2.5} exceedances, so it is possible that revisions or new legislation may come forward in the future to address both road and non-road PM_{2.5} emissions where there are exceedances.



3. Air Quality Context

3.1 Air Quality, Sources and Health

Air pollution refers to the presence of gases and particles which can be of natural and human origin. Individual pollutants have varying short and long-term impacts on human health and the environment. The range and concentrations of each pollutant at a given location vary depending on the source of the pollution and the location of exposure. We refer to the air quality we breathe outside as ambient (outdoor) air quality and as indoor air quality when experienced within an enclosed or indoor space.

Air pollution sources are categorised as primary – directly emitted to the air, such as soot particles – and secondary – pollutants which are formed in the atmosphere, from the processing of primary emissions.

In the UK, the main sources of ambient air pollution are transport, industry, domestic emissions and agriculture. The contribution of each of these sources varies according to the pollutant and location. It should be noted that both natural emissions and transboundary pollution have a significant impact on pollutant concentrations at any given location. Transboundary and regional emissions can impact a wide area and therefore it is key for widespread action to address emissions in order to most effectively enhance air quality across the UK. As part of the PM_{2.5} targets within the Environment Act 2021 and the subsequent Environmental Improvement Plan, it was noted that all areas within England should be able to reach the revised target within the timescales set. However, transboundary pollution, especially in London and the south-east was used to justify not setting a more ambitious target (such as the WHO guideline value).

The policy implication is that levels of primary pollutants typically respond in a straightforward way to control of relevant emissions, while the response of secondary pollutants is more complex. This Framework is primarily dealing with two pollutants ([Appendix B](#) outlines these in more detail):

- Nitrogen dioxide: a gas that is essentially a primary pollutant, emitted directly from or formed following high-temperature combustion (notably, road transport).
- Particulate matter: classified by size, either as PM₁₀ (where particles are less than 10µm (micrometres) in diameter) or PM_{2.5} (where particles are less than 2.5µm in diameter); and has both primary and secondary elements. Direct emission sources include biomass (wood) burning, combustion, resuspended dust and mechanically generated particles; secondary sources include particle formation from the atmospheric processing of NO₂, SO₂ and volatile organic compound (VOC) gases, and NH₃.

Other pollutants such as NH₃ should not be ignored as they have both a direct impact on the natural environment and play a part in secondary PM_{2.5} formation, with emissions largely coming from agriculture.

The mortality burden of long-term exposure to ambient air pollution (i.e., an estimate of how many people prematurely from long-term outdoor air quality exposure) in England in 2019 was estimated to be equivalent to 26,000 to 38,000 deaths a year²⁸. WM-Air researchers estimate that annually in the West Midlands, up to 2,300 early deaths are attributable to long term PM_{2.5} exposure. Most of these deaths attributable to outdoor air pollution are related to long-term exposure to PM_{2.5}. This is reinforced within the Public Health Outcomes Framework (PHOF), where the ‘Fraction of mortality attributable to particulate air pollution’ only includes PM_{2.5}.

In addition to the mortality burden, there is the causation and exacerbation of both avoidable and unavoidable chronic illnesses, such as asthma, along with associated impacts on mental health and cognitive function. As such, exposure to poor air quality has a significant impact on quality of life, public health, and the economy, when considering associated healthcare costs. As shown in **Figure 1**, the impact of poor air quality can affect anyone during their lifetime, and impacts are typically not equal. Air quality inequality can stem from a variety of factors including socio-economics, ethnicity, age and other medical factors (such as pregnancy and pre-existing conditions). There is even research that suggests a link between PM_{2.5} concentrations and antibiotic resistance caused by the spread of antibiotic-resistant bacteria²⁹.

Ambient air pollution also has an impact on the natural environment, with pollutants such as nitrogen oxides (NOx) and NH₃ having an impact on sensitive habitats and biodiversity. This can include changes in nutrient levels and processes such as nitrogen deposition and direct toxicity, where increased pollution can lead to a decrease in biodiversity and even crop damage, because some plants can adapt to the changes better than others.

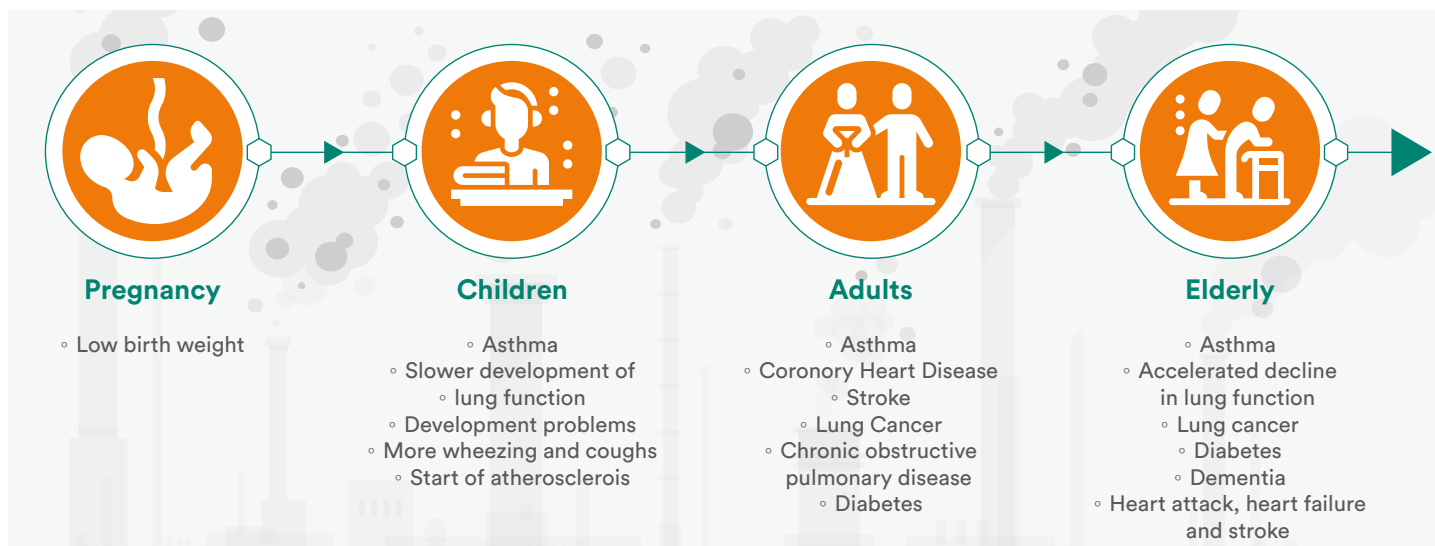


Figure 1: Health effects of air pollution throughout life. Adapted from Chief Medical Officer's 2022 Annual Report: Air Pollution

Indoor air pollution is affected by both actions that happen indoors, and the quality of the air outdoors. Sources of indoor air pollution include combustion sources (such as gas boilers/hobs and solid fuel appliances like log burners), household products, furniture mould, cooking and outdoor pollutants. When compared to outdoor air pollutants, there is a different suite of pollutants that are considered (such as volatile organic compounds (VOCs)) and these are outlined in [Appendix B](#). Indoor air quality is a less mature field of study than outdoor air quality. With improvements to outdoor air quality, it is expected that there will be an increased focus on indoor air quality, given the time that people spend indoors, and the range of behavioural and other interventions which can mitigate exposure. This can include advice on better ventilation, change to electric cooking methods, having a smoke free home (no smoking and log burners), reducing the use of harsh cleaning chemicals and heating/ventilation to prevent condensation leading to damp and mould.

3.2 National Air Quality and Trends

There have been significant improvements in air quality for the last 50 years, especially with pollutants such as NO₂ decreasing significantly over this period and with an expectation for this to continue due to the transport fleet moving to lower and zero (exhaust) emission vehicles. **Figure 2** overleaf shows the trends in major pollutants, expressed as a percentage change from the base year.

The slowing reduction in particulate matter concentrations over the past 10 years, along with the recognition that the electrification of the vehicle fleet may not in isolation result in further significant reductions in particulate matter, means that they pose a long-term threat to human health. This is because although electric vehicles (EVs) and other zero-emission vehicles do not produce tailpipe emissions, they produce more emissions from other sources such as brake, tyre and road wear, which may be higher due to an increase in vehicle weight. Additionally, transport is not the only source of particulate matter, with domestic combustion being a major primary source of particulate matter emissions in most locations (especially in the West Midlands); therefore, the increase in solid fuel combustion seen in recent years has also contributed to the relative stagnation of concentrations.

The pollutant NH₃ has traditionally been considered most relevant to the natural environment (as part of nitrogen deposition and through direct toxicity), however it is becoming more of an important pollutant in terms of human health. This is because it can lead to increased secondary PM_{2.5} concentrations through chemical processes in the atmosphere. Unlike other pollutants, NH₃ concentrations have not reduced in the same way. The vast majority of NH₃ emissions are from agriculture, however it is expected that the contribution from road transport will increase over the next few years due to the increased use of selective catalytic reduction (SCR) to reduce the emissions of internal combustion engine (ICE) vehicles. In addition, a warming climate will increase the volatilisation of NH₃ emissions in agriculture (i.e. the release of NH₃ gases from fertilisers).

The JNCC report on Nitrogen Futures³⁰ suggests that under the ‘business as usual’ (BAU) scenario, by 2030, NH₃ emissions will rise by 1% compared to a 2017 baseline. The reason for this increase is the 11% rise in ‘non-agricultural emissions’, which includes contributions from emission sources such as waste, transport, nature and industry. This more than cancels out any improvements in agricultural processes assumed under the BAU scenario. As such, even if modifications to agricultural practices are put in place (in excess of those assumed within the BAU scenario), non-agricultural emissions should be key target for action.

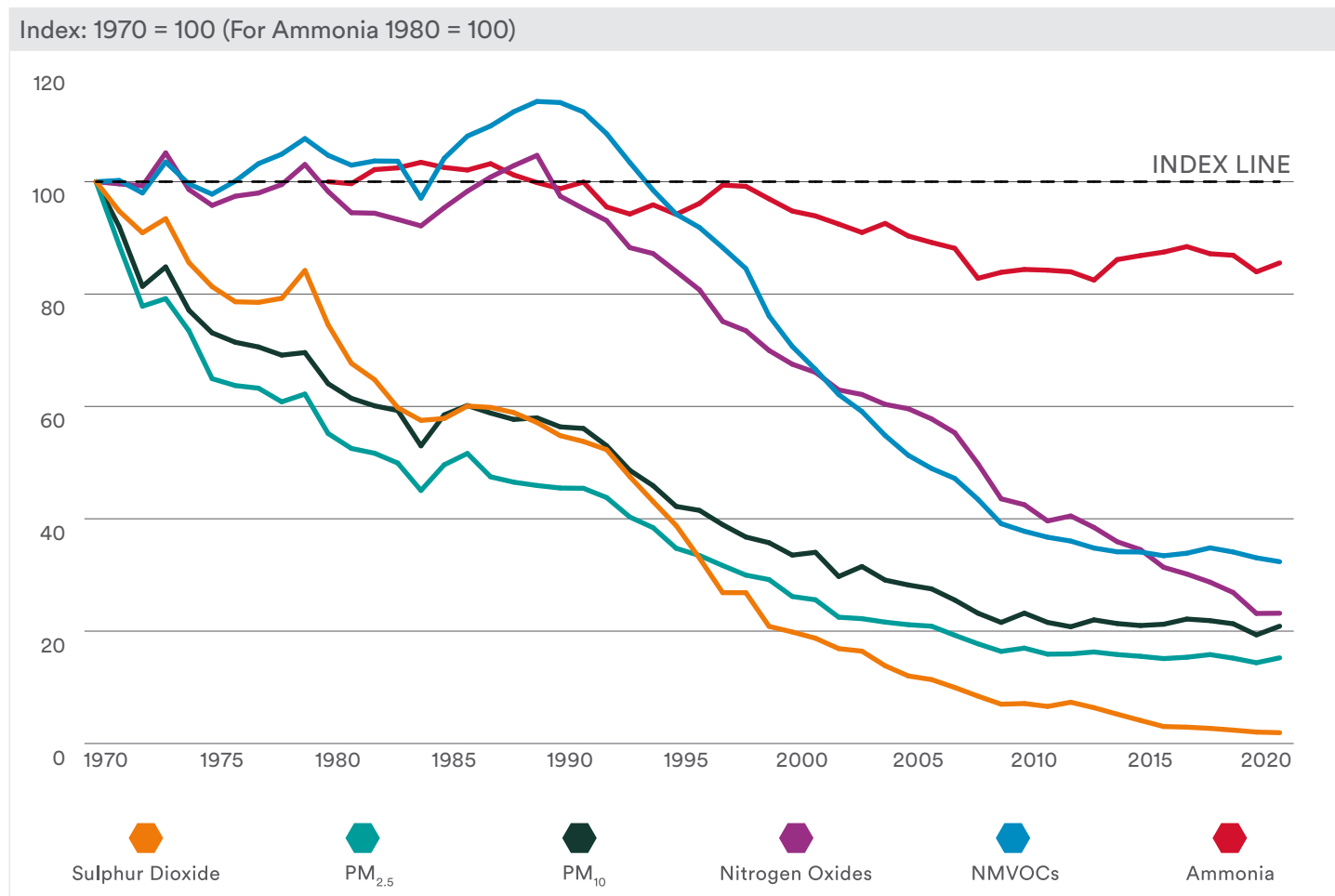


Figure 2: Trends in UK emissions of air pollutants from 1970 to 2021. Based on <https://www.gov.uk/government/statistics/emissions-of-air-pollutants/emissions-of-air-pollutants-in-the-uk-summary>

3.3 West Midlands Air Quality and Trends

The environmental, social and economic impacts of NO₂ and particulate matter on the region have previously been set out in our Air Quality Options Paper (approved by the WMCA Board in February 2022). Ambient air quality has significantly improved over the past 50 years, particularly with notable reductions in pollutants like NO₂. This trend is expected to continue as the transportation industry shifts towards lower and zero-emission vehicles. However, the decrease in particulate matter concentrations has slowed in the last decade. Moreover, particulate matter emissions are not solely from transportation; domestic combustion, especially in the West Midlands, remains a primary source of particulate matter emissions, and an increase in solid fuel combustion in recent years has hindered overall emission reductions.

Source Apportionment

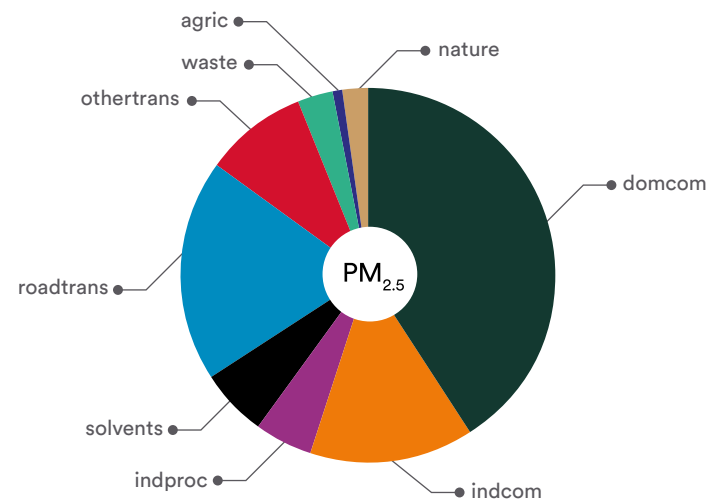
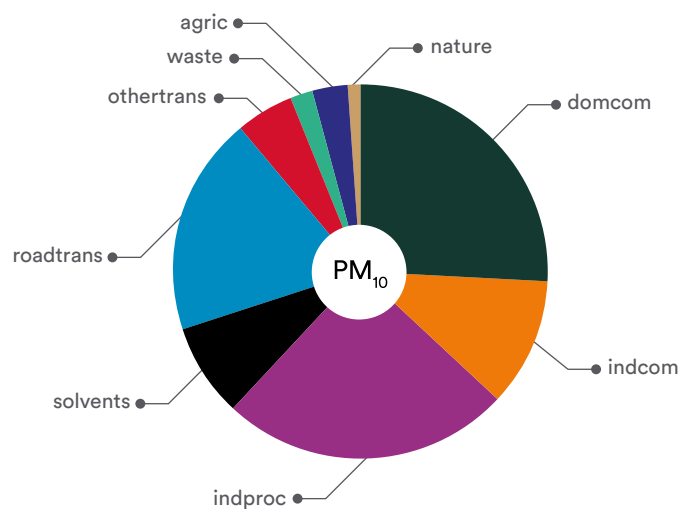
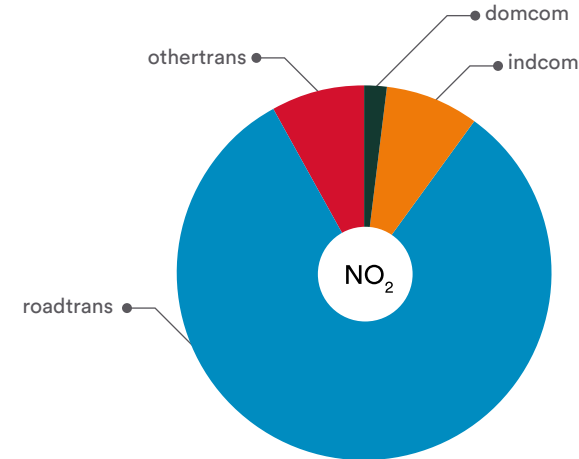
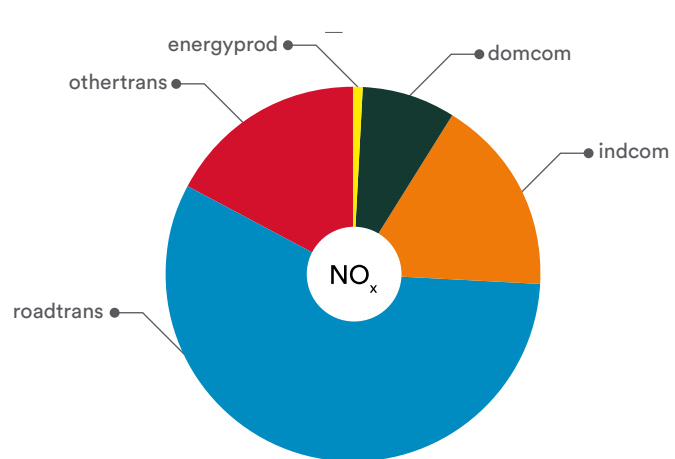
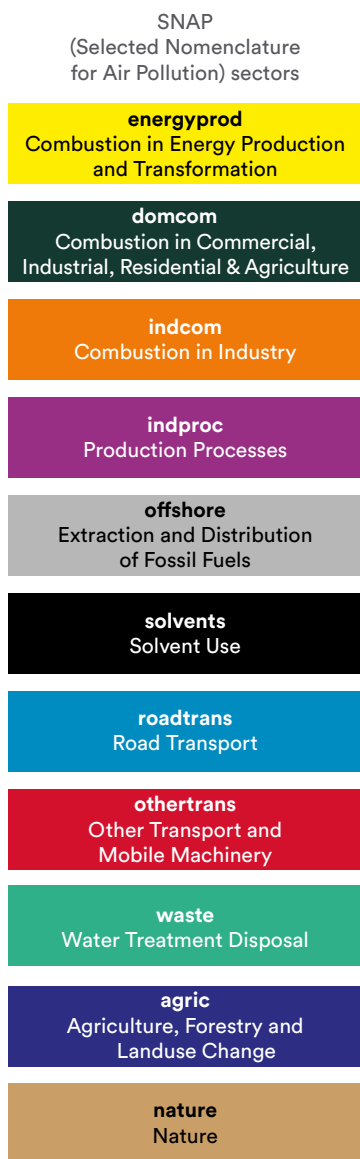
As part of the Options Paper, WM-Air undertook a desktop source apportionment study using the National Atmospheric Emissions Inventory (NAEI) using 2021 as a baseline. The source apportionment for primary emissions (i.e. direct emissions) in **Figure 3** and dispersion modelling results in **Figure 4 and 5** enable the following observations:

- NO_2 and NO_x emissions in the West Midlands are dominated by road transport. Within this, in most urban UK environments, emissions are typically dominated by older diesel vehicles.
- Primary particulate matter emissions in the West Midlands have a much wider spread of sources – including commercial and domestic combustion, industrial production and road transport. The largest single source of particulate matter emissions in the West Midlands is domestic and commercial combustion.
- Air pollutants are dispersed and transported by the wind. Weather conditions can also affect their deposition and removal. Their rate of removal from the air – or lifetime – reflects how important transported pollution can be, relative to local emissions: levels of short-lived species will be dominated by local or regional emissions (e.g. NO_2); at the opposite extreme levels of very long-lived species depend upon emissions globally (e.g. CO_2).
- Particulate matter, with a lifetime of a few days, bridges this divide: particulate matter levels in the West Midlands reflect both local emissions, and transported pollution from elsewhere.

Whilst it is expected that NO_2 will decrease with the move to electric vehicles, projections from the NAEI indicate that we cannot currently anticipate an equivalent reduction in $\text{PM}_{2.5}$ without additional interventions. The WM-Air programme performed a preliminary analysis based on filter samples to identify the main sources of $\text{PM}_{2.5}$ in the air in the West Midlands. The analysis considered the sources contributing to the total $\text{PM}_{2.5}$ present, so in addition to primary emissions from within the region (see **Figure 5**) it includes particulate matter from natural sources (e.g. sea salt), transported pollution from outside of the region, and particles formed by the atmospheric processing of gases. The three sources which made the greatest contribution to total $\text{PM}_{2.5}$ were secondary inorganic aerosol (particles formed in the atmosphere from gases emitted by traffic, agriculture, high temperature combustion), biomass burning / woodsmoke, and traffic-related primary emissions – for example from brakes, tyres, road dust. There were smaller contributions from wider industrial activity, biogenic secondary organic aerosol (particles formed in the atmosphere from compounds emitted by plants) and sea salt.

While a broader range of sources contribute to total concentration than is shown in **Figure 5** (which only considers direct emission from human-made sources within the region), the analysis confirms that the dominant anthropogenic (human-made) contributions are from biomass burning and road traffic, alongside contributions from combustion, agriculture and industry. Action to address the combustion of solid fuels is therefore a key aspect of improving public health within the region.





* The pie charts show all sectors that make a contribution. Sectors with zero contribution are excluded.

Figure 3: Primary (direct) emissions of pollutants by sector for the West Midlands – Drawn from NAEI Data for 2019

Monitoring and Modelling

Across the region, monitored concentrations of PM₁₀ and PM_{2.5} are below their respective objectives, with annual mean PM_{2.5} concentrations being below the 2040 target (10µg/m³) in recent years. This indicates that in comparison to the government's objectives, particulate matter concentrations at monitoring sites are acceptable (although the limited monitoring locations may not capture all pollution hot spots). However, PM_{2.5} in all areas exceeds the WHO Air Quality Guideline Value (5µg/m³); this is the situation across England, due to the combination of urban, rural, and transboundary pollution, from a mixture of natural and human origins. DEFRA 2019 mapping data indicates that ward-average annual mean PM_{2.5} levels in 72 of the 192 wards within the West Midlands exceed 10µg/m³. Modelling by WM-Air³¹ suggests that that 1.2m people or ca. 40% of the West Midlands' population live in wards where ward average annual mean PM_{2.5} concentrations exceed 10µg/m³. What emerges from this data is that the least advantaged areas (highest indices of multiple deprivation (IMD) score) tend to have the worst air quality and that the picture varies depending on the data source and methodology used.

The highest 2021 annual average PM_{2.5} concentrations in the West Midlands are modelled in central Birmingham, Coventry, Sandwell and Walsall (as shown in **Figure 4**). This is largely supported by the monitoring undertaken by the WMCA constituent local authorities and published within their ASRs. N.B this modelled dataset is a modified 2016 model and therefore it has limited consideration of changes due to COVID-19.

Based on the WM-Air modelling (though the Air Quality Life Assessment Tool (AQ-LAT), across the WMCA area in 2021, the estimated *fraction of annual mortality attributable to particulate air pollution* was up to 8.4%, which is higher than the West Midlands average. Sandwell is predicted to have the highest fraction at up to 8.8%, whilst Solihull, has the lowest fraction of attributable mortality in the WMCA area at 7.9%. It should be noted that national PHOF fractions (shown [Appendix B](#)) are based on NAEI background mapping and have a lower fraction in comparison. Although the regional PM_{2.5} monitoring results are promising when compared to the Government's 2040 target, meeting more ambitious targets will reduce the burden and promote a wide array of benefits to the region. These include but are not limited to improvements in health, reduction in inequality and financial benefits of a healthier and more productive West Midlands.

For NO₂, there have been historical exceedances of the annual mean objective prior to COVID-19, and locations in the West Midlands where NO₂ exceeded the objective during covid affected years (2020 and 2021). **Figure 5** shows that the highest concentrations are next to major roads and urban areas. In line with the national trends, the number of locations exceeding the annual mean NO₂ objective has been decreasing over the past 15 years, however in some urban locations, the concentrations are not decreasing at the same rate as elsewhere within the region. The results for 2022 (the first year not to have significant COVID-19 related impacts) are currently being prepared by local authorities, so this will provide further update on the progress made in dealing with road-source NO₂ emissions and exceedances of the annual mean NO₂ objective.

Summary

The summary of the current air quality situation is as follows:

1. The highest annual average PM_{2.5} concentrations in the West Midlands are modelled in central Birmingham, Coventry, Sandwell and Walsall (as shown in **Figure 4**). This is largely supported by the monitoring undertaken by the WMCA constituent local authorities and published within their ASRs. More details on current concentrations and recent trends are provided in **Table B.2** within [Appendix B](#).
2. DEFRA provide air pollution estimates of pollution concentrations at 1km resolution. When data for 2021 is averaged to ward level, these data show annual average PM_{2.5} levels in 72 of the 192 wards within the West Midlands exceed 10µg/m³ (the Environment Act 2021 PM_{2.5} target for 2040).
3. Modelling suggests that 1.2m people or ca. 40% of the West Midlands' population live in wards with average PM_{2.5} levels exceeding the Environment Act 2021 PM_{2.5} target for 2040/the 2005 WHO guideline level (10µg/m³).

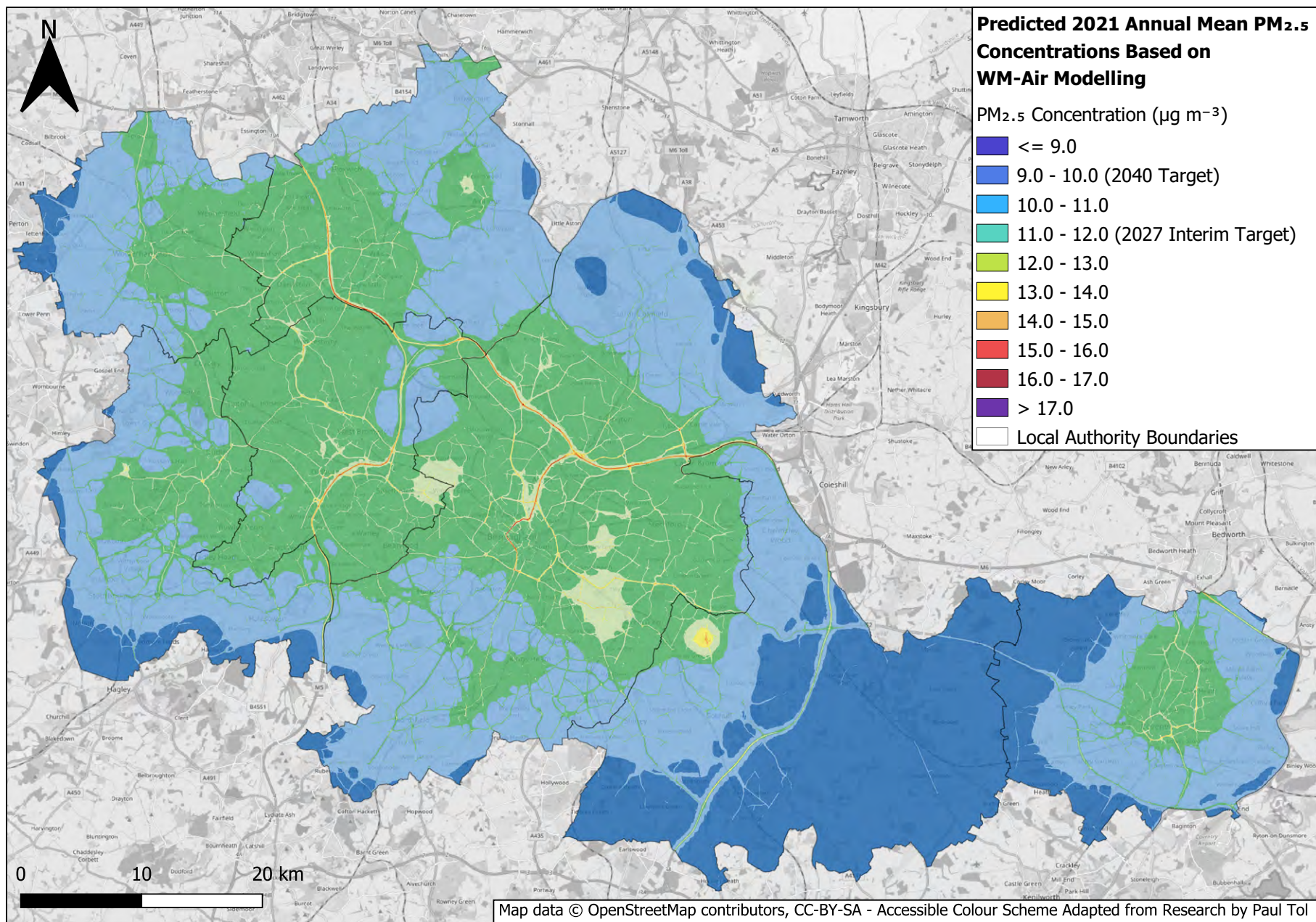


Figure 4: Predicted 2021 annual mean concentrations of PM_{2.5} in the West Midlands. Drawn from NAEI emission data & WM-Air modelling. Concentration scale based on 10% increments of the 2040 PM_{2.5} target.

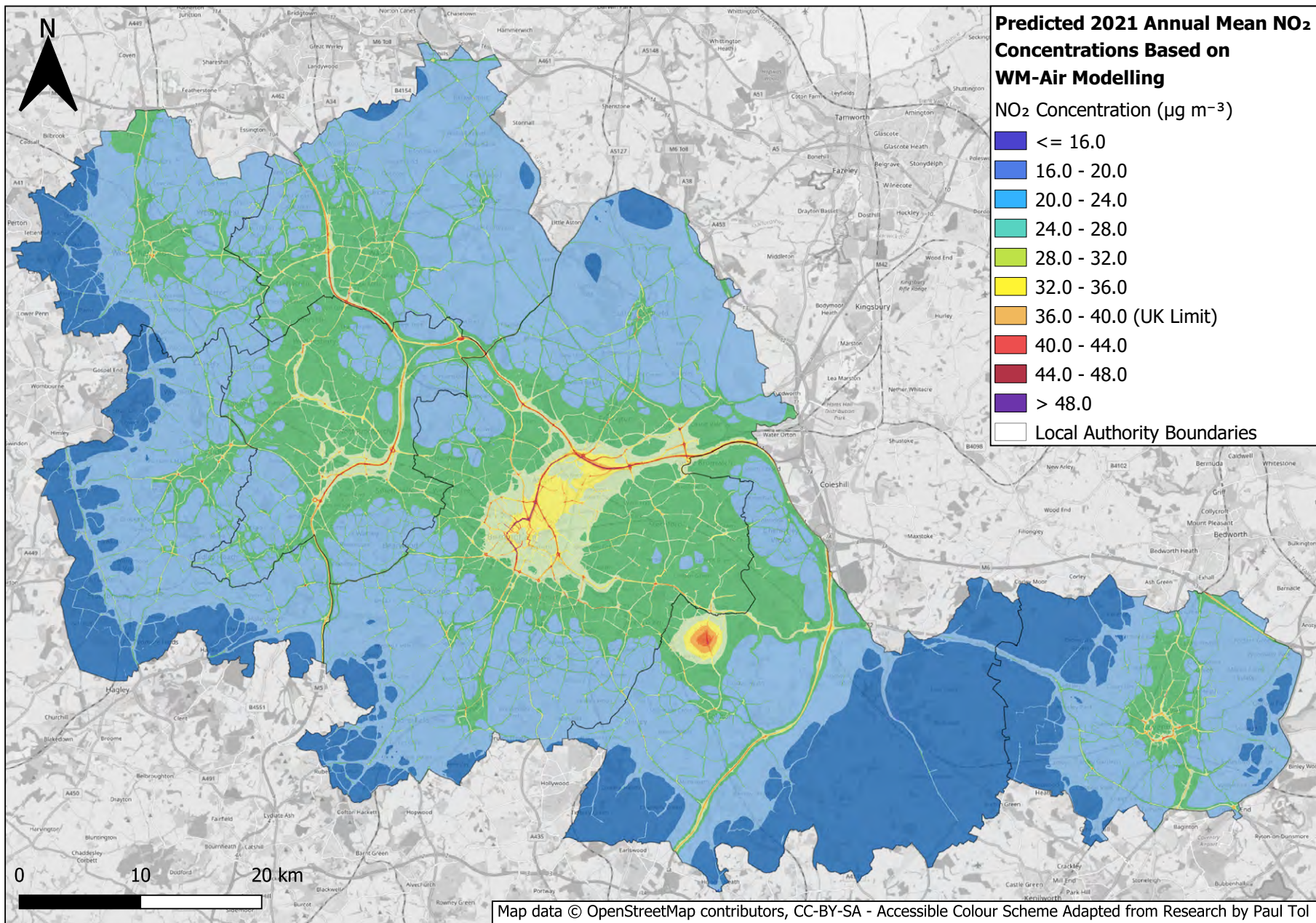











Figure 5: Predicted 2021 annual mean concentrations of NO₂ in the West Midlands. Drawn from NAEI emission data & WM-Air modelling. Concentration scale based on 10% increments of the current long term NO₂ target.

4. Introduction to the Framework

The West Midlands Air Quality Framework presents a list of 158 potential options that have been appraised to address poor air quality across the region. After a RAG (Red-Amber-Green) process was undertaken, **145 options** have been assessed and weighted to provide a prioritised list of actions. The methodology behind the RAG and option appraisal is described in Section 6.

The scope and scale of each of the options does vary, with several options having overlapping themes and outcomes. This ensures that the Framework can be utilised on an option-by-option basis or to form consolidated work packages. This approach has been used to produce the work packages and individual options outlined within the Framework Implementation Plan.

The volume of options identified is such that they have been grouped to make it easier to navigate the Framework, noting that there are overlaps between the different ‘intervention areas’. These are:

	Engagement and behaviour change	7.1
	Domestic emissions and indoor air quality	7.2
	Transport	7.3
	Natural and built environment	7.4
	Commercial, industrial and agriculture	7.5
	Public health	7.6
	Planning, policy, governance and mechanisms for change	7.7
	Monitoring and digital	7.8
	Climate and Net Zero Considerations	7.9

For the purposes of this document, the main options for each of these areas have been presented within the categories above. A complete list is provided in [Appendix D](#) which provides shows all options appraised through the evaluation process, along with full details of the scoring applied during each appraisal stage. We have also recognised that there is a significant amount of work already taking place across the region to tackle poor air quality; case studies have been provided to highlight some examples of where this is the case.

As has already been set out, this document is not a strategy, but a live ‘to-do’ list of options to reduce air pollution in the WMCA region and inequality of exposure more specifically. As policy and regulation changes and updates, or as new technology becomes available, the Framework can be refreshed to incorporate those changes.

There are a number of dependencies related to the delivery of the actions identified here. These include:

- Sufficient investment/ financing to implement or sustain activity. There is a grant available to initiate actions, but investment needs to be secured to maintain progress in the long term.
- A policy environment that supports and rewards an accelerated approach to improving air quality, locally, regionally and/ or nationally.
- A willingness to collaborate to deliver projects and programmes where scale provides efficiency and consistency.
- Capacity to deliver the options and actions, as some are more time and resource intensive.

5. Key Stakeholders, Consultation and Wider West Midlands Strategic Approach

Key Stakeholders

Delivering this Framework will require the involvement of a range of different stakeholders from the public, charity and voluntary, research and private sectors. A number of them have been involved in the development of this plan. Identified stakeholders include:

- **Government organisations:** DEFRA, the Environment Agency, and the UK Health Security Agency (UKHSA).
- **Local authorities:** the seven constituent authorities have been consulted to date, although we also commit to working with our non-constituent authorities on delivery.
- **Health organisations:** public health within local authorities and the UKHSA (i.e. what was Public Health England) will be critical partners in delivering the Framework, and supporting its messaging; national groups seeking health outcomes (e.g. Asthma and Lung UK) will also be important partners.
- **Universities and the research sector:** we have a close working relationship with the University of Birmingham and the research that has been undertaken through the WM-Air project.
- **Private sector:** working with individual businesses and industry, as well as with business-facing organisations (e.g. Business in the Community, Sustainability West Midlands, Growth Hubs). We will use our Net Zero Business Pledge to support work in this area.
- **Voluntary sector:** there are a number of groups supporting awareness-raising of air quality issues, e.g. anti-idling campaigns and awareness about the health issues from solid fuel burning.
- **West Midlands communities:** Supporting and working with residents across the West Midlands to get involved in protecting, enhancing and restoring nature will be critical to the success of this plan. WMCA's Greener Together Citizens' Panel has enabled input from a group of citizens representative of the West Midlands.
- **Potential Air Quality Partners:** The Environment Act (2021) makes provision for working with Air Quality Partners and these will be critical for the delivery of some of the actions included. Air Quality Partners may be a neighbouring local authority; a designated Relevant Public Authority (such as National Highways); and the Environment Agency.

At the inception of the Framework, and throughout the process, regular discussion and consultation was undertaken with TfWM, constituent local authorities and partners such as WM-Air. Details of the contributors and consultees for the Framework are given in [Appendix C](#). These discussions shaped the Framework's scope and direction, along with specific options which had not been previously identified. The WMCA's Greener Together Citizens' Panel also led the development of guiding principles that should be used as part of the detailed assessment and implementation of options outlined in this Framework Implementation Plan.

As this work develops, our engagement will need to stretch beyond this initial group, bringing in others that will be necessary to help us achieve the scale of intervention required. This will also include broadening the range of businesses involved; bringing significant landowners on board; and stakeholders who can support with understanding the routes to financing.

Draft Framework and Option Consultation

A targeted consultation process was also undertaken in August 2023, culminating in an in-person workshop event. Organisations from the public sector (including health, public health, and local authorities); research; and third sector organisations that have an interest in environment, health and air quality were invited to the event. The workshop event allowed for relevant decision makers, and other key organisations, to provide feedback on the draft Framework document, discuss air quality issues and make recommendations on the options they would like to be progressed first. Following the consultation event, feedback and comments were collated, and a decision made to produce a Framework Implementation Plan that details the priorities and additional details on aspects such as timescales and funding.

Wider West Midlands Strategic Approach

This Framework, and the subsequent Framework Implementation Plan, sit within wider strategic policies. Strategic approach, and delivery, is dependent on effective coordination across other WMCA and local authority functions. These predominantly relate to:

- Existing air quality plans (especially local authority Air Quality Action Plans and strategies)
- Transport plans, including the TfWM LTP, and associated area strategies and implementation plans.
- Net zero plans. At a regional level this is the WM2041 plan (and the associated Five-Year Plan) as well as local authority net zero strategies.
- Other linked area of work, e.g. regional and local public health and natural environment plans.

These are represented in the diagram below (**Figure 6**). We expect the Air Quality Framework Delivery Group to work with all these areas as part of delivery (also see governance in **Section 7**).

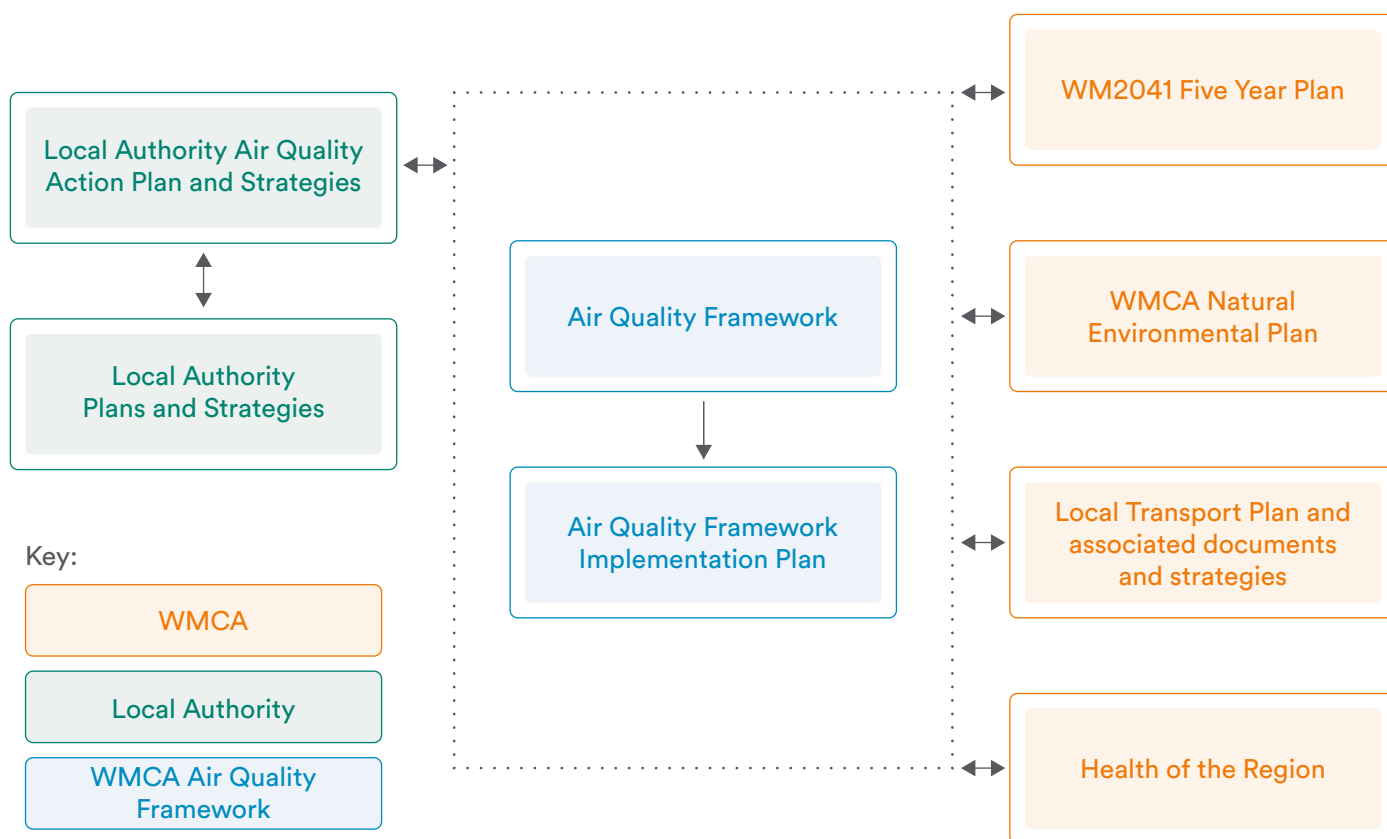


Figure 6: Alignment of the WMCA Air Quality Framework to Regional Strategies

Within the areas (boxes) in the above diagram, there are specific plans and strategies that will be relevant to the successful delivery of air quality improvements. For example, local authority plans and strategies represents planning, local net zero plans, public health strategy, transport and natural environment (noting these may not necessarily be interlinked at a local authority level). We will be relying on the work with local authorities to identify areas where the Framework can support on delivery and consistency.

Further, each of these plans/ strategies will be on a different cycle of renewal, approval, and adoption. As a result, the aim is for the Framework to support the provision of up-to-date information and action on addressing air quality for inclusion where appropriate.

6. Framework Scope and Methodology

This section highlights the scope of the Framework along with the methodology used to determine and appraise the options for inclusion within the Framework.

6.1 Framework Scope

The scope of this Framework is defined by both geography and powers:

Geography – The West Midlands Combined Authority comprises 7 constituent local authorities (Birmingham, Coventry, Dudley, Sandwell, Solihull, Walsall and Wolverhampton) and 11 non-constituent local authorities³². For the purposes of this work, we have focused on the role of the constituent local authorities but, as with many other environmental issues, there is scope to collaborate across different geographies, for example, the Coventry and Warwickshire Air Quality Alliance have been a stakeholder in developing the Framework.

Powers – Delivering air quality outcomes requires a range of powers. The main ones are highlighted here, including the role of different organisations in delivery.

Table 6.1 shows the organisations and which areas they are responsible for. It should be noted that although some partners have powers for some aspects (such as CAZ responsibility for WMCA), they are not always enacted. As such, anything that can be delivered by WMCA, constituent local authorities or partners is within the scope of the Framework. Options which fall outside of the scope of the Framework typically are those which rely upon Government to promote or are not implementable within the current powers. Each option also has an indicative WMCA role assigned to it, which is as follows:

Table 6.1: Roles and Responsibilities Within the West Midlands						
Organisation	Responsibilities					
	Transport	Planning	Public Health	Environment (excluding air quality)*	LAQM	Clean Air Zone (CAZ)
WMCA	✓			✓		✓
Local Authorities	✓	✓	✓	✓	✓	✓
Environment Act (2021) Air Quality Partners**	✓	✓	✓	✓	✓	✓
Notes:						
* This is a responsibility that is shared across regional and local authorities. There are currently no statutory obligations (that sit outside planning), but the WMCA is expecting to be appointed responsible authority for the Local Nature Recovery Strategy (as outlined in the Environment Act, 2021).						
** Air Quality Partners may be a neighbouring local authority; a designated Relevant Public Authority (such as National Highways); the Environment Agency						

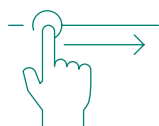
Role of WMCA

Each option within the Framework has an indicative WMCA role assigned to it, which is as follows:



Lead

WMCA would have direct responsibility and would take action;



Enable

WMCA can enable the option to go forward in some capacity (e.g. undertaking preliminary assessment work, providing physical items (e.g. trees) to enable the work to go forward);



Convene

Bring parties together to discuss an issue/option and how it can be resolved. This could include providing inputs on challenging issues and then finding the mechanisms to address them (such as mitigation or adaptation).



6.2 Framework Methodology

The Framework methodology has been subject to an ongoing development process, with reviews at each stage to ensure that it remains relevant and satisfies the requirements of all parties. As shown in **Figure 7**, there are nine distinct stages to the Framework.

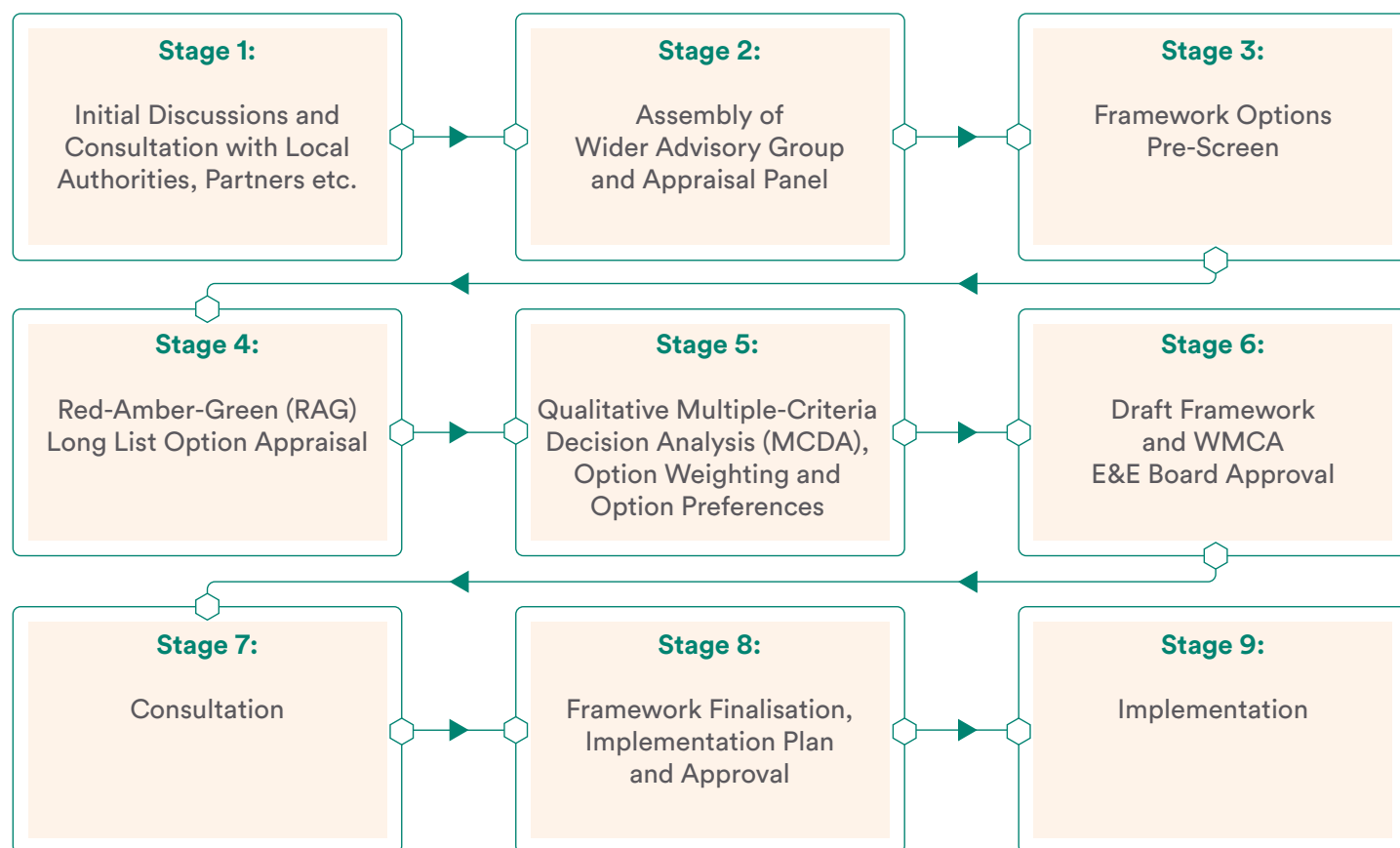


Figure 7: Framework Stages and Workflow

Stage 1:

At the inception of the Framework, and throughout the process, regular discussion and consultation were undertaken with TfWM, constituent local authorities and partners such as WM-Air. These discussions shaped the Framework's scope and direction, along with specific options which had not been previously identified.

In-person meetings were used to understand what the local authorities and partners would like to get out of the Framework, and to build the foundations for the increased regional co-operation which underlies many of the Framework themes and options within them.

Stage 2:

To develop the Framework in more detail, a significant number of air quality professionals were consulted at different stages. This includes representatives from WMCA, TfWM, University of Birmingham/WM-Air, air quality representatives from the constituent local authorities and Framework consultant WSP. **Table C.1** in [Appendix C](#) outlines the members and who contributed at each stage. This list does not include the wider collaborators and consultees who are listed in **Table C.2** in [Appendix C](#). The WMCA's Greener Together Citizens' Panel also led the development of principles that should be used to assess the implementation of options outlined in this Framework.

Stage 3:

All options outlined within the initial Air Quality Options Paper³³ and other key sources (such as from Defra³⁴) were complied with the outputs from Stage 1 and the ongoing consultation process. Any options which were clearly outside of the Framework scope, or were unlikely to be within scope in the future, were excluded from the longlist. All options which may be at all feasible or within the scope of the Framework were carried forward.

Stage 4:

A RAG rating system was used to summarise qualitative indicator values, where green denotes a 'favourable' value, amber a 'neutral' value and red an 'unfavourable' value. The four indicator values cover a wide range of key areas and were deliberately qualitative, so that there would not be a preference towards specific options which do or do not have different types of evidence to support them.

Table 6.2 shows the four key indicators and the rationale behind their inclusion, and **Table D.1** in [Appendix D](#) details the specific criteria used to determine if a red, amber or green rating would be applied to each indicator.

An additional 'objection to inclusion' indicator was added to enable an objection to be raised to the continuation of the option, based on professional judgement, officer opinion or other justifiable reasons.

An option was stopped from proceeding to the final Framework shortlist if there were two 'red' ratings from the four main indicators and/or a 'red' rating given based on an objection. This was to ensure that only options that had a realistic chance of implementation would be appraised further. **Table D.2** in [Appendix D](#) shows the results of the RAG grading.

Table 6.2: RAG Indicator Values and Rationales	
Indicator Value	Rationale
Is the option within the Framework scope and/or directly implementable by WMCA or constituent local authorities?	To determine if the option is deliverable and is within the scope of the Framework.
Funding and resourcing	When working with local authorities, officers have made it clear that funding and resourcing are major constraints. Even with sufficient funding for some options, when it comes to delivery, the current staffing and workload would present an issue.
Air quality, health and inequality	The potential impact of a measure on pollutant concentrations, health and inequality are some of the key considerations. Having an adverse impact on one or more of these.
Co-benefits	Options that benefit other areas of related work (such as carbon and climate) are important, however not all options will have co-benefits, and some may be detrimental to other work.

Stage 5:

To appraise the shortlisted Framework options, a qualitative multiple-criteria decision analysis (MCDA). MCDA is a systematic approach used to make decisions when multiple criteria or factors need to be considered. It provides a structured and systematic framework to support decision-making by considering multiple criteria. Given the nature of the Framework, it will also assist in clarifying objectives and facilitating the evaluation and comparison of alternatives, leading to more informed and transparent decision-making processes. As with the RAG rating, the criteria were deliberately qualitative, so that there would not be a preference towards specific options, which do not typically have quantitative evidence to support them. The aim is for a more detailed assessment of the options to take place at any funding stage should it be required.

The MDCA matrix can be found in **Table D.3** in [Appendix D](#). The core groupings for each of the criteria (and the weightings) and the criteria themselves are as follows:

- Health (40% weighting)
 - » Improvement to human health
 - » Exposure and/or emission reduction and/or promote long-term behaviour change
 - » Protect and enhance social and health equality
- Spatial impact (10% weighting)
 - » Scale of benefit within WMCA's area
 - » Address hotspots/areas of existing and future exceedance
- Alignment with local and national measures/policy (15% weighting)
 - » Compatible with achieving Environment Act 2021 AQ targets (PM_{2.5})
 - » Accelerate local authority AQAP/CAP measures
- Cost, implementation and timescales (25% weighting)
 - » Implementation feasibility
 - » Timescales for the effective first implementation
 - » Indicative implementation cost
 - » Health cost-benefit
- Co-benefits (10% weighting)
 - » Accelerate the transition to a low-emission economy (including net-zero and climate co-benefits)
 - » Facilitate regional economic growth and ambition

Table C.1 in [Appendix C](#) outlines the people who contributed to the MCDA stage. The appraisal and scoring for the MCDA process were agreed upon between the MCDA appraisal team and primarily undertaken as a group in person. This was to ensure that ideally a group consensus can be formed, or where there are disagreements, these can be discussed and then either agreed upon or a compromise made. Given multiple options for each theme would be considered and it is a high-level assessment of the options, this was seen to be the most robust way of appraising the options.

Stage 6:

Once the options had been appraised, an overall check on the MCDA group weightings was undertaken to check that they achieved the right balance. The only changes that were made were to uplift the health weighting and slightly downgrade *spatial impact* and *alignment with local and national measures/policy*. Once the options had been weighted, they were ranked based on their position within their theme sub-category (i.e. the transport sub-category within engagement and behaviour change); rank within the theme (i.e. within engagement and behaviour change); and rank within all Framework options.

The ranking process aided the selection of the key options (as highlighted within Section 7); a full breakdown of the appraisal and scoring can be found in **Table D.4** in [Appendix D](#).

Stage 7:

At the July 2023 WMCA Environment & Energy Board, a draft version of this document was endorsed, which enabled it to go to consultation. A targeted consultation event was held in August 2023 and is outlined in **Section 5**.

Stage 8:

Following the consultation, the feedback and comments were analysed, and modifications made to the draft Framework where required. In addition, the suggestions on options to be taken forward over the next few years were collated and incorporated into the Framework Implementation Plan. The Framework Implementation Plan was endorsed by the WMCA Environment & Energy Board in September 2023, alongside being presented to various WMCA/TfWM boards and panels.

Stage 9:

Following approval by the WMCA Board, actions outlined within the Framework Implementation Plan can be progressed, alongside the establishment of the Framework Delivery Group. More details on implementation and governance are detailed in **Section 8**.



7. Highlighted Options

This section includes both the options that have scored highly in the analysis undertaken and any that the appraisal team wish to highlight. The complete list of options sorted by ranking and with associated detail, can be found in [Appendix D](#). This section outlines the potential priority options, either because of the impact they will have or because they are things that can be delivered quickly and/or with minimal budget. The Framework Implementation Plan includes details on the options taken forward in 2023-2025, however the remaining options are able to be selected and implemented in isolation.

The Framework lists all potential actions, none of which have yet been approved to be taken forward. The Framework Implementation Plan identifies the initial priorities for action, however taking any of these actions forward will be subject to WMCA and local authority governance processes. Where required, additional business cases and detailed assessment will be produced for WMCA board sign off.



7.1 Engagement and Behaviour Change

This section outlines some of the areas where there is potential for people to make changes that will directly benefit their health and immediate environment in relation to air quality. However, it is important to recognise that, for many, there need to be changes in infrastructure, affordability and ease of access to enable them to make better choices; this section does not therefore sit in isolation from the options described in Sections 7.2 – 7.9 below. The highest-ranking behaviour change options, along with selected options that the appraisal team wish to highlight have been included here (with the full list provided in [Appendix D](#)). They focus on:

- Reducing solid fuel burning inside and outside the home;
- Supporting active travel and reducing car use;
- Providing better information to support decision-making through web platforms and interactive digital solutions; and
- Linking green space, and what people and communities can do, to improve air quality/ reduce exposure to air pollution through the uptake of natural environment measures.

This will form a significant part of the WMCA's work on air quality over the next two years through a DEFRA air quality grant. This work will build on some of the activity that is already taking place in our local authorities. This is described in the case studies highlighted here.

Case Studies: DEFRA air quality grant

In March 2023, the WMCA was awarded just under £1m of DEFRA funding to develop engagement and behaviour change campaigns in conjunction with its local authorities. The work will take place over 2 years and will include:

- 21 community events to raise awareness of air quality as an issue;
- 7 in-depth behaviour change campaigns to try and identify ways we can work with people to improve air quality outcomes across the West Midlands;
- An air quality literacy training programme to support policy officers and decision-makers; and
- The development of a communications tool kit to support consistent messaging on air quality issues across the region.

In addition, the WMCA has worked with the Greener Together Citizens' Panel to consider some of the options that have been put forward through this Framework and to take feedback on the acceptability and urgency of implementation. Their thoughts have been included in this document.



7.1 Engagement and Behaviour Change

Case Studies: Improving air quality in Sandwell through encouraging behavioural change

Following the challenge of improving air quality in Sandwell, and after receiving an Air Quality Grant from DEFRA in 2021, Sandwell Metropolitan Borough Council are using eight EarthSense Zephyr air quality monitors and a public portal to deliver live air pollution data to faith centres and their communities. The services are being used by faith leaders to raise public awareness of air pollution in Sandwell and demonstrate how people can adjust their everyday behaviour to minimise personal exposure and improve local air pollution levels.

The Zephyr monitors were positioned outside 8 different faith centres across the borough in 2022 and have been relocated to 8 new faith centres in 2023. Measured and modelled data for nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}) is available on a public data portal which is displayed on TV screens inside the main areas at each faith centre. Air pollution data can be accessed by faith communities and the wider public through computers, tablets, or smartphones, enabling individuals to identify areas of pollution and potential personal exposure across Sandwell.

Sandwell Metropolitan Borough Council has also developed a toolkit for faith leaders that provides information about indoor and outdoor air pollution, methods for community engagement, and a range of options and actions that all support the aim of reducing local air pollution. All centres also receive a monthly Faith Centre Air Quality newsletter, with a different air quality theme each month. By using the public portal, the toolkit and support from council air pollution officers, the council is helping faith groups to find and engage with simple pollution reducing interventions.

A conference was held in November 2022 for faith leaders to report their experiences and to offer advice to the next eight centres. Many positive actions were reported, including tree planting, car free days, anti-idling campaigns, free bicycle repair workshops, garden planting as well as the adoption of energy reduction measures in their centres and homes. In response to faith centre feedback, all centres now have an air quality notice board, which increases the level of information than that just displayed on the public portal and can also be used advertise activities that support better air quality, i.e. learn to ride sessions, walking groups, led bicycle rides and energy saving sessions.



Table 7.1: Top 10 Engagement and Behaviour Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
To raise awareness of specific air quality issues and potential solutions associated with the use of log burners, fireplaces and bonfires.	EBC1	1 (6.05)	A reduction in solid fuel combustion and exposure.	Raise awareness of the risks to health, how to reduce exposure and promote a reduction in use through behaviour change. To best disseminate information, the use of trusted messengers, community voices, influencers and celebrities could be used to promote key information, make it relatable and ensure it is heard. Testimonials can also be used to promote the benefits of change. Both inclusive and modern forms of communications (such as Instagram and TikTok) should be used where appropriate. A public arts programme with high profile and visual messaging could bring a sense of community to messaging and helping to achieve wider impacts and engagement.	Enable	£50-100k; and <1 Year
Leverage campaigns for public transport, walking and cycling to promote the various co-benefits (including emissions and health) along with exposure mitigation.	EBC10	2 (5.95)	Accelerate modal shift and co-promote the associated air quality and health benefits.	Adding the air quality aspect to active travel and public transport to advice on common perceptions (such as increased exposure) and look at the wider environmental, cost and health benefits. Tie in with existing active travel schemes and initiatives such as Smarter Choices and Modeshift.	Lead	£100-250k; and 1-2 Years
Raise awareness of air quality issues and potential solutions associated with general domestic combustion.	EBC2	=3 (5.65)	A reduction in solid fuel combustion and exposure.	Raise awareness of the risks to health, how to reduce exposure and promote a reduction in use through behaviour change. To best disseminate information, the use of trusted messengers, community voices, influencers and celebrities could be used to promote key information, make it relatable and ensure it is heard. Testimonials can also be used to promote the benefits of change. Both inclusive and modern forms of communications (such as Instagram and TikTok) should be used where appropriate. A public arts programme with high profile and visual messaging could bring a sense of community to messaging and helping to achieve wider impacts and engagement.	Enable	£50-100k; and <1 Year
Where solid fuel combustion is required, raise awareness to ensure the correct fuels are used (i.e. dry seasoned wood).	EBC3	=3 (5.65)	A reduction in pollutant concentrations from appliance use and exposure.	Right fuel for domestic combustion information campaign. Raise awareness of the effects of using the incorrect fuel (along with the co-promotion in the reduction in solid fuel combustion) and what the associated impacts on health are. To best disseminate information, the use of trusted messengers, community voices, influencers and celebrities could be used to promote key information, make it relatable and ensure it is heard. Both inclusive and modern forms of communications (such as Instagram and TikTok) should be used where appropriate. Testimonials can also be used to promote the benefits of change.	Enable	£50-100k; and <1 Year
Use health professionals to educate and disseminate targeted air quality information to vulnerable and at risk patients.	EBC27	5 (5.25)	Provide critical information to vulnerable people and resources on how they can manage and mitigate the risks.	Work with health professionals to implement a standardised set of information and resources to reduce the risk associated with air quality exposure. Working with professionals and organisations with an interest in this area will encourage the dissemination of the information from trusted advisors and result in greater awareness and behaviour change. It can be linked to existing and future services (such as air quality warning tools) so that users can reduce the risk of complications and benefit both themselves and the healthcare system.	Enable	£100-250k; and 1-2 Years
Use low-cost sensors to capture high level domestic combustion data to be used in effective behavioural change advertisement and create real life stories/ case studies.	EBC9	6 (5.20)	Produce effective behavioural change through a reduction in the sale and use of combustion sources in the home, resulting in reduced pollutant concentrations and exposure.	A more personal approach to engagement is likely to produce results and similar approaches have been done by Public Health Scotland/University of Sterling where monitoring in homes was used for second hand smoking impacts.	Enable	£50-100k; and 1-2 Years
Engage with council and private housing organisations to increase awareness of indoor air quality issues and the actions that need to be taken to reduce the impacts.	EBC6	7 (5.10)	An increase in the visibility of indoor air quality as a major issue across the housing industry, to promote more action to be taken and mitigation implemented where possible.	Advice and toolkits can be developed to provide information and upskill those in the industry (as those residents have less control over certain aspects) to have another avenue for information sharing and behavioural change.	Convene	Officer time only and/or below £50k; and 1-2 Years
Use a regional air quality website to deliver key air quality information and effective information to facilitate behavioural change through a single point for the West Midlands.	EBC31	=8 (5.05)	Raise awareness of air quality and the associated issues by providing key information in a digestible format and feasible methods of behaviour change.	Through the DEFRA funding that has been secured, compile key monitoring, engagement and behaviour change onto one centralised website which can be used in all communications. This will ensure there is consistency within publicly facing information and becomes a resource which is used for multiple uses including health, planning and STEM. A self-contained website with information covering all areas will be much easier to approach than seven different websites by each local authority. Pooled resources plus specific behavioural change support by the WMCA will shape the website based on resident demand and how it can effectively improve air quality outcomes and promote behaviour change.	Lead	£50-100k; and <1 Year

Table 7.1: Top 10 Engagement and Behaviour Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Interactive online resources to demonstrate air quality issues.	EBC32	=8 (5.05)	Use engaging methods to communicate air quality and exposure as an issue in order to promote effective awareness and behaviour change.	This could be included within the regional air quality website through specific pages and integration into monitoring aspects. This could include enabling an accessible way for people to look up their local air quality (along with what it means for them). This could then be expanded to show differing scenarios of what widespread behaviour change could achieve and how it could affect air quality and health outcomes.	Lead	£50-100k; and <1 Year
Use trusted advisors to disseminate air quality messaging (including faith leaders, GPs, nurses, fire service etc).	EBC34	10 (4.75)	Effectively deliver air quality information to achieve outcomes such as reduced exposure, health awareness and co-benefits of reduced pollution.	The use of trusted advisors rather than from the typical local authority sources is likely to aid both the reach and likelihood of behavioural change occurring. It will also allow for at risk groups to be specifically targeted in the correct setting and to have messaging specifically tailored for them.	Enable	£50-100k; and 1-2 Years

Table 7.1.2: Selected Other Engagement and Behaviour Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Ensure that air quality communication and engagement are consistent and inclusive across the West Midlands (and modified where necessary) to make messaging as clear as possible with the best chance of behavioural change.	EBC38	11 (4.60)	Achieve better air quality outcomes and knowledge leading to behaviour change through widespread standardised but effective communications.	Currently, each local authority has its own method and approach to air quality communications, which allows for a wide range of topics to be covered in theory. By having specific communication packages and details for specific air quality subjects, campaigns can be more easily co-ordinated on a mass scale with less time burden on comms teams and officers. Currently, there is little co-ordination between local authorities and communications happen at different times in different areas and the messages differ. A coordinated and consistent approach would still give local authorities autonomy on what communications to send, however the messaging distributed would be consistent (which will also promote time efficiencies) and the WMCA/partners could aid in the support and enabling of such communications. It is expected that more widespread communication campaigns occurring at the same time will produce better air quality outcomes than the current approach.	Lead	Officer time only and/or below £50k; and 1-2 Years
Provide a centralised online public resource and/or platform for engagement and behaviour change co-ordination across the West Midlands.	EBC30	12 (4.55)	The WMCA could act as a centralised organisation/ platform to manage and co-ordinate large scale behavioural change to ensure consistency and use economies of scale to deliver results for the region.	By having a platform and process for reporting ideas and delivering engagement and behaviour change, it can enable benefits such as economies of scale and consistent messaging. It will also promote the sharing of information, experience and data between constituent local authorities. This option will be initiated through the delivery of the DEFRA funding secured.	Lead	£50-100k; and 1-2 Years
Provide advice on how residents can utilise green spaces to improve health and reduce pollution exposure during exercise.	EBC19	14 (4.40)	Reduce exposure to poor air quality during exercise and outdoor time, whilst promoting health co-benefits.	Provide a resource that explains the benefits behind changing behaviour and outlines the co-benefits of exercise and exposure to green spaces. Can provide an inventory of spaces with available maps and cross reference with WM-Air modelling to show what areas are most suitable for exercise and reducing exposure. Will promote positive response, especially in the cases where younger people will be using the areas/mums. Where green spaces are within local authority control, more should be done to enhance the spaces and make the areas more accessible.	Lead	Officer time only and/or below £50k; and <1 Year
Provide information on how residents can use planting and green infrastructure to reduce pollutant exposure and improve health/wellbeing.	EBC20	14 (4.40)	Reduce exposure to poor air quality by providing advice on the most effective methods of reducing the dispersion of pollutants from emission sources.	Provide a resource that outlines the methods to reducing exposure from planning and green infrastructure and the benefits this can bring.	Lead	Officer time only and/or below £50k; and <1 Year
Raise awareness of wider general indoor air quality issues, how to manage and potential solutions.	EBC4	19 (3.95)	An improvement to general indoor air quality within the home and reduce exposure.	Raise awareness of the sources and environmental factors which control indoor air quality, the impact on health and how these can be mitigated. Tie in with minimum energy efficiency standards and potential for regional pass scheme. To best disseminate information, the use of trusted messengers, community voices, influencers and celebrities could be used to promote key information, make it relatable and ensure it is heard. Testimonials can also be used to promote the benefits of change. Both inclusive and modern forms of communications (such as Instagram and TikTok) should be used where appropriate. A public arts programme with high profile and visual messaging could bring a sense of community to messaging and helping to achieve wider impacts and engagement.	Enable	£50-100k; and <1 Year
Have an open route for communication and co-ordination between comms teams at the WMCA and local authorities to be able to effectively co-ordinate and deliver air quality communications.	EBC39	20 (3.80)	Improved air quality outcomes through more effective communications.	Currently one of the major constraints in terms of air quality communications is the timescales for each local authority comms team and then having agreement on what should be delivered. Having more open dialogue and then drawing on a pre-prepared package of messages as proposed elsewhere within the options will ease the burden on both the comms and officer side, along with providing more effective communication.	Lead	Officer time only and/or below £50k; and 1-2 Years
Work with existing public health channels to deliver consistent messaging across the West Midlands.	EBC29	21 (3.65)	Use existing contacts to increase air quality awareness, promote behaviour change through the delivery of consistent messaging.	Using a mixture of existing channels and new partnerships, disseminate a common message on air quality relating to public health.	Enable	£50-100k; and 1-2 Years



7.2 Domestic Emissions and Indoor Air Quality

This section outlines some of the key options that could be implemented to reduce domestic emissions and improve health outcomes. Domestic combustion is a key source of PM_{2.5}, typically accounting for around 40% of the emissions across the West Midlands region. Domestic emissions have both outdoor and indoor air quality impacts and therefore are a critical part of improving health and reducing disparities in the West Midlands. There are many synergies with the Engagement and Behaviour Change options, however these options are more specific interventions to remove appliances and support changes in behaviour.

There will be improvements forced by net-zero initiatives (such as the phasing out of gas boilers), however the growth in solid fuel appliances (i.e. log burners) over the last few years has significantly increased preventable domestic emissions. In the vast majority of cases, solid fuel appliances are not needed as a primary source of heat and are less cost-effective than using gas or electric heating. As such, reducing the non-essential emissions as much as possible, alongside the other mandated changes, will result in reduced PM_{2.5} concentrations. Unlike the engagement and behavioural change elements in Section 7.1, the options in this section will require more funding and potential Government support/backing to implement widely.

Work is already underway on some of the options; however, a more consistent national and regional approach will aid the implementation and effectiveness of the options. The highest-ranking domestic emissions and indoor air quality options have been included here (with the full list provided in [Appendix D](#)).



Table 7.2.1: Top 5 Domestic Emissions and Indoor Air Quality Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Support landlords and homeowners in accessing grants to retrofit.	DOM6	1 (5.60)	Improve the uptake of retrofit in properties in both rented and owned properties to reduce emissions across all retrofit areas.	Accelerate retrofit programmes which will aid air quality by signposting and supporting applications.	Enable	£250-500k; and 2-3 Years
More stringent requirements within the planning process for expediting the transition from gas central heating.	DOM7	2 (5.25)	Reduce the installations of gas boilers in new builds in advance of the proposed 2025 deadline set by the government.	By creating and leveraging more stringent planning requirements where possible (plus the consideration of the expansion of other methods currently in use), the transition could be accelerated. Otherwise, any boilers installed for new builds are unlikely to be replaced before the proposed 2035 phasing out of new installations.	Convene	£50-100k; and 5-10 years
Reduce fuel combustion by improving home energy efficiency.	DOM1	=3(5.00)	A reduction in the fuel and energy used to heat and cool the home.	In the UK, new homes are typically very well insulated so that in the winter they require less energy to keep warm, however suffer when it comes to cooling in the summer. Older buildings may be more challenging to warm in the winter but have better properties to keep cooler in the summer. Therefore, tailored advice and changes for each home is required. This could be achieved through expansion of current retrofit programmes and be something that has potential to be expanded upon in devolution discussions in the future. A key area given the changing climate.	Lead	>£5m; and 2-3 Years
Supporting the transition from gas central heating.	DOM4	=3 (5.00)	Accelerate the transition from gas central heating to improve both ambient and indoor air quality.	Accelerate retrofit programmes which will aid air quality by signposting and supporting applications.	Enable	>£5m; and 2-3 Years
Smoke control area expansion.	DOM8	5 (4.50)	Reduce the use of non-approved appliances and move towards cleaner fuels to reduce emissions and improve both ambient and indoor air quality.	With the exception of Birmingham, Dudley and Sandwell, there is scope to expand the smoke control areas in the other five constituent local authorities. The expansion of the existing smoke control areas will make it an offense to emit smoke from a chimney, furnace, or other solid fuel combustion appliance (unless the fuel used is an authorized "smokeless" fuel or the appliance is an "exempt" appliance). By providing information through advertising the smoke control area expansions, there are opportunities for both behaviour change in frequency of combustion and the fuel / appliance used. Enforcement of smoke control areas are costly and somewhat difficult in some cases, so using it primarily as a behaviour change engagement tool is likely to be the most effective.	Convene	Officer time only and/or below £50k; and 1-2 Years
Use the planning process to restrict the installation of new solid fuel appliances in the cases where planning consent is required.	DOM2	6 (4.30)	Reduce the number of solid fuel appliances being installed and therefore reducing potential new emission sources.	By using various approaches within the planning process, it may be possible to restrict the installation of solid fuel appliances where planning permission is required. Some local authorities are investigating this, however there does not seem to have been a legal test to determine how this fits in with permitted development rights.	Convene	£100-250k; and 2-3 Years



7.3 Transport

This section outlines some of the key transport options that could be implemented to reduce road transport emissions and exposure. Transport has been the primary area of action for air quality impacts in recent years, primarily because 80% of the NO₂ emissions in the West Midlands region are from road transport. TfWM and the local authorities have responsibilities for transport, with TfWM being the Local Transport Authority (LTA) for the West Midlands and the local authorities having highway authority responsibilities. As an LTA, TfWM has the statutory duty to produce a Local Transport Plan (LTP) which sets out policies to promote safe, integrated, efficient and economic transport to, from and within the area, as well as plans to implement those policies.

The recently published West Midlands Local Transport Plan (WMLTP5) core strategy³⁵ outlines the overarching plan for the region. This document sets out the wider strategy, which will then be followed up by four areas strategies and six detailed strategies to cover the 'big moves'. The objectives for the LTP are centred around '5 Motives for Change', which are "five areas where changing transport could help us better support Inclusive Growth by improving the impacts of transport on people, and the places and environment on which they depend". These motives are:

- ◆ Sustaining economic success;
- ◆ Creating a fairer society;
- ◆ Supporting local communities and places;
- ◆ Becoming more active; and
- ◆ Tackling the climate emergency.

The avoid, shift and improve framework has been used to create the six big moves which are:

- ◆ Behaviour change;
- ◆ Accessible and inclusive places;
- ◆ Walk, wheel, cycle and scoot;
- ◆ Public transport and shared mobility;
- ◆ Safe, efficient and reliable network; and
- ◆ Green transport revolution.

The "avoid, shift, improve" framework was used to develop each of the big moves and air quality can be improved through the plans which will come forward. However, sufficient assessment needs to be undertaken to ensure that human health is not affected as a result of the implementation of the big moves once the details are presented within the area strategies.

The highest-ranking transport related options, along with selected options that the appraisal team wish to highlight have been included here (with the full list provided in [Appendix D](#)). Supporting this is the ongoing work of local authorities and TfWM in delivering electric vehicle charging infrastructure across the West Midlands.

Case study: Reducing concentrations at hotspots in Dudley

Dudley has long-term monitored NO₂ exceedances at several locations within the borough, with the primary cause being road transport emissions. As such, there have been a series of schemes to reduce concentrations by improving traffic flow and therefore reducing emissions from repeated start/stop events.

The Castle Gate Island area forms part of an arterial route into Dudley and therefore there are particularly high NO₂ concentrations at junctions. Funding was secured to undertake a package of measures to improve traffic flow, including:

- ◆ Improvements and upgrades to the pedestrian crossing; and
- ◆ Adding intelligent sensors to the five sets of traffic lights around this Island, this has reduced the start stop burden on vehicles travelling through the area.



7.3 Transport

In the Wordsley area, there have been monitored exceedances of the NO₂ annual mean objective. As such, a package of measures was implemented that included:

- Alterations to the road layout including adding box junctions and filter lanes; and
- Upgrading the traffic lights in two key locations to improve the flow of traffic.

Following these changes, it brought an area that previously exceeded the annual mean objective for NO₂ into compliance.

Case study: West Midlands bus fleet upgrades to improve air quality

TfWM has worked in partnership with West Midlands bus operators since 2019 to secure the largest Euro VI bus fleet in the UK outside London, approximately 2,000 buses. Progress is now being made to upgrade the fleet further, so that all buses will be zero emission electric, or hydrogen powered, by 2030.

Since April 2019, over 950 buses have been modified to Euro VI standard through a £21m programme of national, regional and private funding.

To progress further improvements, Transport for West Midlands (TfWM), Coventry City Council, and operators were awarded £50m by the Department for Transport in 2022 to help secure an all-electric bus fleet for Coventry. Approximately 300 buses serving the city will be electric by 2025, through the All-Electric Bus Town funding.

Department for Transport “ZEBRA” funding was also awarded to the West Midlands in 2022, for a further 124 zero emission buses, including 24 articulated buses for the Sprint Bus Rapid Transit route between Walsall, Birmingham and Solihull.

Significant investment by National Express West Midlands means that an additional 300 electric double decker buses will be operating in the West Midlands by the end of 2024, in line with the strategy of a 2030 zero emission bus fleet.



Table 7.3.1: Top 10 Transport Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Achieve a zero emission West Midlands bus fleet by 2030 and consider use which brings greatest benefit to areas with poor air quality in the deployment strategy.	TRN8	1 (6.75)	Reduce pollutant concentrations at hotspots and areas with relevant exposure as a priority to improve health outcomes where is it needed most.	Where there are high concentrations and/or receptors are disproportionately affected, zero-emission/ hydrogen buses could be deployed first to see the greatest benefit, following an assessment of fleet deployment. TfWM aims to have all buses be zero-emission electric or hydrogen by 2030. Capital costs of achieving this zero emission fleet will be ongoing up to 2030.	Convene	£50-100k; and 1-2 Years
Speed limit reduction (or dynamic speed limits) on high-speed roads.	TRN15	2 (5.10)	To reduce the emissions from vehicles on high-speed roads and the associated exposure to receptors nearby.	Typically, the areas around high-speed roads are more deprived and a reduction in emissions will reduce exposure and improve health outcomes. A reduction in speeds has been used successfully elsewhere (typically 70mph to 50mph) as this brings most vehicles into the range of optimal fuel efficiency and a reduction in tailpipe emissions. This could be implemented through a fixed speed limit change, or a dynamic limit triggered by traffic flows or specific air quality limits.	Convene	>500k; and 2-3 Years
Support and accelerate transition to zero emission bus fleet.	TRN7	3 (4.85)	Reduce the emissions associated with public transport by moving to a zero-emission bus fleet as quickly as possible.	Support from an air quality perspective could include funding and grant support, increased ridership through behavioural change campaigns and making buses more attractive and therefore more economically viable to become zero-emission in the shortest period of time.	Lead	>£5m; and 3-4 Years
Ensure that there is the sufficient assessment/integration of transport plans and projects (such as area transport strategies and mitigation schemes) to ensure that the air quality impacts are quantified and where necessary, mitigated.	TRN1	4 (4.45)	Promote and realise wider benefits to air quality/health and an increased consideration and mitigation of disbenefits. Transport schemes should not lead to an increase in emissions or public exposure.	Not all transport schemes will have a positive benefit on air quality. Therefore, plans and projects need to assess both the local health impact on receptors and the wider health outcomes at a strategic level. In addition, a set of criteria should be set to identify where there is a risk of air quality deterioration, which would then ensure that schemes which would not normally be assessed are correctly assessed.	Lead	£50-100k; and 2-3 Years
Reduce parking for new developments where possible and local services are not available, ensure that transport needs are addressed and are improved in the local area.	TRN6	5 (4.25)	Reduce the reliance on cars and require robust transport options to ensure the uptake of active and public transport for new residents.	Through the planning process, ensure that transport measures are correctly assessed and where there are limited public transport/active travel options, these should be provided at an agreed stage prior to completion of the development. In urban areas where there are pre-existing transport links and access to key services, a reduction in car parking spaces should be proposed and alternatives such as car clubs should be investigated.	Convene	£250-500k; and 2-3 Years
Additional Clean Air Zones/ congestion charge zones which consider NO ₂ and other pollutants.	TRN3	=6 (3.90)	Reduce emissions and exposure in key areas through the limitation of certain vehicle types, promoting fleet evolution and gaining revenue to spend on transformational schemes and projects.	Through the restriction or charging of non-compliant vehicles, it should detract non-compliant vehicles from entering the area or raising funds by doing so which can be spent on other areas, such as domestic combustion. Current CAZs are used for NO ₂ exceedances, so other metrics or a change to the triggers would be required for more areas to become part of one. This would be subject to changes to current national legislation on Clean Air Zones. However other methods of charging, such as those applied to, the London ULEZ could be used, however this would need to be carefully considered as the West Midlands and London differ in terms of car ownership and the reliance on car use (both of which could adversely affect more deprived areas).	Convene	>£5m; and 3-4 Years
Create a route planning tool with modelled/real time air quality information so that people can reduce exposure when walking and/or make the decision to take public transport.	TRN24	=6 (3.90)	To provide an effective route planning tool which both promotes the uptake of active/ public transport, but also considers air quality exposure and will therefore allow users to avoid high concentrations if required for health reasons etc.	The end product would provide residents with information that allows them to make informed decisions, while being a solution which requires just small changes to behaviour. Using the tool would be simple change and when linked to digestible air quality information, has the potential to be effective in reducing transient exposure. The co-promotion of active and public transport being is likely to be used the most by those who have underlying health conditions which are sensitive to air pollution. These tools could be tied in or integrated into existing travel planning tools such as Smarter Choices and Modeshift Stars to maximise benefits and uptake.	Lead	>500k; and 2-3 Years

Table 7.3.1: Top 10 Transport Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Investigate the lowering and enforcement of speed limits in urban centres and residential areas to address localised transport related air pollution and increase active travel. This includes further roll-out of 20 mph speed limits.	TRN16	8 (3.55)	Assess the impacts that lower speeds and fewer deceleration and acceleration events will have, along with the potential modal shift as a result. This could include changes in tailpipe emissions and brake wear from ICE vehicles and wear of parts on all vehicles.	The impact of lowering and enforcement of speed limits should be looked at to see if effective schemes can be introduced to reduce vehicle emissions as part of a range of traffic management measures, particularly for residential areas. The lowering of speeds is likely to increase the safety of road users and pedestrians which should increase the uptake of cycling and other forms of active transport. However, the suite of interventions introduced as part of a speed limit reduction would need to be assessed as a blanket reduction in speed in some cases can increase emissions from internal combustion engine (ICE) vehicles in urban areas.	Convene	>£1m; and 2-3 Years
Designating new & priority bus measures.	TRN9	9 (3.50)	Promote the uptake of buses by having it as a quick and efficient mode of transport and therefore promoting behaviour change and less car usage.	Making the bus network more time efficient and better to use should promote modal shift and with the move to zero-emission buses, improve pollutant concentrations further. However, there are potential associated short-term drawbacks with increasing bus priority, especially if there is not the expected initial modal shift. This includes additional delay and congestion for car users. which in turn is likely to increase emissions at a time when the majority of the car fleet is still dominated by ICE vehicles.	Convene	>£5m; and 5-10 years
HGV bans/restrictions in urban centres, including out of hours freight delivery.	TRN17	10 (3.35)	A reduction in the number of highly polluting HGVs and/or the uptake in low emission HGVs leading to reduced pollutant concentrations.	By restricting HGVs in urban centres and/or limiting their time of operation, this should reduce the emissions from such vehicles increasing existing pollutant concentrations and at times where exposure would be at its highest. Moving the freight delivery time will be a compromise, however this does have associated issues with staffing to receive such deliveries. As such, investigating the impacts of all potential approaches (including emissions thresholds) would need to be undertaken to appraise in detail.	Convene	>£1m; and 2-3 Years

Table 7.3.2: Selected Other Transport Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Redesign bus stops and other minor waiting locations (where there will be transient exposure to high concentrations).	TRN23	17 (2.40)	Determine key locations to reduce the exposure of public transport users to poor air quality by using features to reduce the dispersion of pollutant/moving away from sources in areas where there is transient exposure.	Create more inviting environments at waiting locations where the exposure to pollution is reduced by using features such as vegetation barriers and separation from emission sources. Avoid putting bus stops in street canyons and enforce zero idling in the vicinity of the waiting areas for all traffic, with associated signage.	Lead	£250-500k; and 3-4 Years
Implementation of new road surface compositions/ construction methods and road treatments once research reveals effective solutions.	TRN22	18 (2.25)	To reduce particulate emissions related to road wear and resuspension.	There is ongoing research into new road materials, construction methods and treatments. It is not yet clear what of these will emerge as being a viable and cost-effective method to take forward into the future. Additional action is likely to be needed for roads given the increase in average vehicle weight associated with BEVs, so new approaches are most likely to be implemented for new roads or when work is being undertaken.	Convene	>£5m; and >15 years
Research and 'test-bed' implementation of new road surface composition and construction to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	TRN25	=24 (0.85)	Research and utilise new technologies and techniques to reduce pollutant concentrations from road transport.	Partner with companies and research facilities to research, test and implement new technologies.	Convene	£250-500k; and 3-4 Years
Research and 'test-bed' implementation of new tyre composition and manufacturing techniques to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	TRN26	=24 (0.85)	Research and utilise new technologies and techniques to reduce pollutant concentrations from road transport.	Partner with companies and research facilities to research, test and implement new technologies.	Convene	£250-500k; and 3-4 Years
Research and 'test-bed' implementation of road treatments to reduce resuspension.	TRN28	=24 (0.85)	Research and utilise new technologies and techniques to reduce pollutant concentrations from road transport.	Partner with companies and research facilities to research, test and implement new technologies.	Convene	£250-500k; and 3-4 Years



7.4 Natural and built environment

Air quality, health and the environment we live in are all interlinked and so ensuring that the environment that surrounds us promotes healthy and sustainable lifestyles is key. The natural environment plays a large role in air quality and the health of towns and cities, but in the past, there has been a reduction in the number of green spaces and vegetation. This is now being improved by mechanisms such as biodiversity net gain (BNG), however more can be done to improve the natural and built environment around us. Many of the options within this section merge both the improvement in the natural environment being used to compliment and improve the built environment.

Access to green space is important for many health reasons, but it also provides spaces for people to enjoy where they are exposed to lower concentrations of many pollutants. Dense treelines and hedgerows also serve important roles, especially when it comes to particulate matter. Such green barriers can reduce the dispersion of pollutants from roads and other sources and reduce concentrations where people may be exposed for long periods of time. However, detailed assessment should be taken as the barriers will inhibit the dispersion of the pollutants and may increase concentrations elsewhere.

Case study: West Midlands Natural Environment Plan

The WMCA Natural Environment Plan, published in 2021, sets out a number of actions that will contribute to improving air quality and reducing exposure to poor air quality in local communities across the region.

Specific action include:

- Exploration of incorporating tree-lined streets into the finished design for every West Midlands transport scheme which involves redesigning streets and is funded by the Combined Authority.
- Working with Transport for West Midlands at the early stages of programme/ project development to include green infrastructure as part of the transport network, e.g. green roofs on shelters, semi-natural habitat into verges /leftover land.
- Providing support to local community groups to develop a network of accessible open spaces through the Community Green Grant, giving communities the opportunity to access greenspace away from major sources of air pollution.

Further to this the WMCA as Responsible Authority for the development and delivery of the Local Nature Recovery Strategy will explore mechanisms for incentivising the creation of nature-based solutions in urban areas are part of delivering nature recovery, biodiversity net gain and other environmental outcomes.



Table 7.3.1: Top 10 Transport Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Land use planning - give preference to developments in locations that minimise the need to travel and/or propose sufficient facilities, which will therefore reduce operational impacts.	NBE8	1 (4.85)	Use land use planning to reduce the impact of new developments through reduced reliance on private vehicle use and promote active travel.	Reducing the reliance on cars and other modes of transport by being near to existing facilities or provide sufficient facilities on site. This will reduce emissions related to travel compared to a site which is further away/does not have any on site facilities.	Convene	£50-100k; and 2-3 Years
Promote transport schemes and road alterations that include effective green infrastructure to reduce exposure to poor air quality.	NBE2	=2 (4.60)	Reduce the impact of transport schemes through considered design by ensuring the design is mindful of air quality and reduces exposure as much as possible from the outset.	Although transport schemes can be designed to reduce the impact as much as possible (including siting away from areas of exposure and managing traffic flows), additional effective green infrastructure should reduce the impact of any schemes on receptors. Design guides could be produced to ensure that consideration of green infrastructure to improve air quality and the natural environment is considered by all parties during the design phases.	Lead	£50-100k; and 2-3 Years
Require the consideration of the co-benefits of site Masterplanning and ecological features on reducing exposure to poor air quality.	NBE3	=2 (4.60)	Reduce the impact of development through considered design by leveraging ecological features within the masterplan that are also designed with air quality benefits in mind. This should reduce exposure as much as possible from the outset.	This should reduce exposure as much as possible from the outset, while providing ecological benefits. This could be implemented using design guides and requirement to consider in the planning process. Where possible, green spaces should be protected, enhanced, and made more accessible. Work should also be taken locally to reduce the inequalities regarding green space access.	Convene	£50-100k; and 2-3 Years
Use damage cost contributions to effectively improve the environment and green infrastructure around new schemes.	NBE4	=2 (4.60)	Improve the environment in the vicinity of the development and increase the funding available to improve air quality and the natural environment in the surrounding area.	By assigning a damage cost methodology (including a clear process on where it should sit within the planning process) the process can be used to either mitigate impacts during the design phase or be used to target air quality and natural environment improvements elsewhere. The process should not be a way to simply let a developer pay their way out of mitigating any impacts but ensure the betterment of the environment as a whole in the vicinity of the development.	Convene	£50-100k; and 2-3 Years
Increase the use of dense urban vegetation to create barriers between sources of pollution and places of exposure.	NBE7	5 (4.35)	Use dense vegetation as a barrier to pollutant sources and reduce exposure.	Dense barriers are more of an effective method to improve air quality outcomes than planning trees which are dispersed over a wider area. Key hotspots could be targeted and prioritised to ensure that exposure is reduced where it needs to be and that funding can be targeted.	Convene	£100-250k; and 2-3 Years
Leverage modified biodiversity net gain (BNG) metrics to improve urban design and reduce exposure to poor air quality.	NBE1	6 (4.30)	Use BNG as a method to drive air quality improvements in design which will aid in the reduction of exposure for future residents and users of the area.	By adjusting local/regional BNG metrics to promote measures/features which promote air quality benefits and combining with planning requirements, there can be a shift in the West Midlands towards reducing exposure and embedding that within the design of schemes from the start. Where possible, green spaces should be protected, enhanced, and made more accessible. Work should also be taken locally to reduce the inequalities regarding green space access.	Lead	Officer time only and/or below £50k; and 1-2 Years
Use street furniture and natural features to reduce exposure and create barriers at key waiting locations.	NBE10	7 (3.70)	Leverage new street furniture and natural features in waiting locations to reduce exposure.	Where there is significant transient exposure, new street furniture such as bus stops could be installed further away from the road and include dense vegetation as a barrier to pollutant sources and reduce exposure.	Convene	£250-500k; and 2-3 Years
Construction of new high quality cycle tracks and other cycle infrastructure in accord with West Midlands cycle network planning, including links between key developments and key services to promote mode shift from car.	NBE11	8 (3.60)	Reduce emissions from vehicles due to modal shift and through considered design of new developments.	Increasing the attractiveness and ease of cycling will promote modal shift. In the long term, the increased uptake of cycling as a regular mode of transport will reduce the number of cars in key urban locations. However, there are short term disbenefits where there may be more congestion due to road works/road space being used to create the cycle lanes and the uptake lag.	Enable	>£1m; and 2-3 Years



7.5 Commercial, industrial and agriculture

This section outlines the options which could be implemented to address emissions from commercial, industrial and agriculture. Typically, many aspects of industrial and agricultural emissions are outside of the remit of local authorities (many permitted by the Environment Agency), however there are options that can bridge this gap. The options here cover a broad range of areas, with many using existing and potential pathways for implementation, while others may require co-working or support from the Government. It should be noted that the emission sources do vary across the West Midlands, with sources affecting both local and regional pollutant concentrations.



Table 7.5.1: Top 10 Commercial, Industrial and Agriculture Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
NO _x , SO ₂ , VOC, PM abatement guidance and providing support on how this can be achieved/funded.	CIA12	1 (4.15)	Reduce emissions from plant and installations through guidance, advice and signposting to funding.	Work with the Environment Agency to provide tailored West Midlands guidance and distribute through established and new communication channels.	Convene	£50-100k; and 2-3 Years
Consistent advice, policy and enforcement of dust abatement measures.	CIA16	2 (4.10)	Reduce the impact of construction on air quality.	Through the provision of consistent policy and guidance, construction companies will have a clear understanding of the expectations when working across the West Midlands. As such, a higher consistent standard should deliver results when it comes to reducing dust nuisance and the impact on health. Enforcement will be difficult within the current resourcing for the local authorities.	Convene	£50-100k; and 1-2 Years
Promote off-site construction and manufacturing.	CIA20	3 (3.90)	Reduce level of dusty manufacturing within the construction process and reducing local construction emissions.	Through the promotion of off-site construction in urban areas, emissions can be minimised by reducing the usage of on-site machinery and dust producing processes. This should have the benefit of reducing the impact of construction at nearby receptors. It will also aid in the re-education of materials wastage and speed up construction, so any pollutants emitted on site will take place over a shorter period.	Enable	Officer time only and/or below £50k; and 1-2 Years
Increased scrutiny and consideration of health impacts relating to heat/power generation from biomass/waste/incineration.	CIA4	4 (3.80)	Ensure that combustion sources are appropriately sited to reduce exposure and emissions are appropriately mitigated.	Biomass and other combustion processes can have a significant impact on local and regional air quality, especially when the cumulative impacts are considered. Such additional scrutiny should include more stringent consideration of air quality health impacts, location suitability and appropriate mitigation where required. Alternatives should also be appraised to ensure that all options have been considered. It is also one of the main public concerns when air quality comes up as a discussion as it is very visual, so public feedback and education is also key if such plant is going to be more prevalent in the future. Potential for assessments of existing installations where there is the potential for adverse impacts as well as what could be done to mitigate the impact on public health.	Convene	Officer time only and/or below £50k; and 2-3 Years
Discourage investment in biomass fuelled heat/power and potential for regulating biomass combustion plants <1MW.	CIA11	5 (3.35)	Reduce emissions from smaller plant and promote alternatives which do not have such an impact on emissions and exposure.	Through more rigorous assessment of biomass plant and the air quality/climate trade-offs, the viability of smaller scale energy/heat generation should be a requirement, especially in urban areas.	Convene	£50-100k; and 2-3 Years
Facilitate and promote access to funding for commercial retrofit of heating and cooling systems.	CIA9	=6 (3.30)	An improvement in heating/cooling efficiency leading to a reduction in emissions and improvement in indoor air quality.	By providing guidance and advice on what current grants and support is available, the uptake of such schemes is likely to be higher and promote a move to more efficient methods and reduce the reliance on on-site combustion.	Convene	£50-100k; and 1-2 Years
Increase/establish co-working with the Environment Agency to enforce permits.	CIA5	=6 (3.30)	Reduce the emissions from Environment Agency permitted installations and promote best practice.	Enforce compliance and open communication channels for operations which fall outside of the local authority remit by having joint operations and communication campaigns.	Convene	£100-250k; and 2-3 Years
Non-domestic buildings - Reduce fuel combustion by improving Energy efficiency through grants and guidance.	CIA2	8 (3.05)	Reduce local and regional emissions through a reduction in the volume of fuel required.	By providing guidance and advice on available grants and support, the uptake of such schemes is likely to be higher and lead to improvements in energy efficiency. New grants through devolution funds/deals will be able to target specific need if required. This may not have a large local impact as it depends on the fuel that is being used.	Enable	>£5m; and 3-4 Years
Undertake audits of the local authority commercial building stock to determine what measures can be implemented.	CIA6	9 (2.85)	Assess what can be done to reduce emissions, improve indoor air quality and improve energy efficiency.	By understanding what the baseline situation is for the commercial stock, retrofit and upgrades can be made based on priority and the impact that can be made.	Enable	£100-250k; and 2-3 Years
Non-domestic buildings – Transformation of heating away from the combustion of fuels.	CIA3	10 (2.80)	Reduce local and regional emissions through a change in the fuel type or heating method used.	By providing guidance and advice on what current grants and support is available, the uptake of such schemes is likely to be higher and promote a move to heating methods that do not use on site combustion. New grants through devolution funds/deals will be able to target specific need if required.	Enable	>£5m; and 5-10 years



7.6 Public Health

This section outlines the options that can be implemented to improve the air quality related health outcomes in the West Midlands. It should be noted that there are many public health elements integrated into many of the options within other sections. This section outlines those that do not fall within other sections and have a strong link to public health and therefore it should not be assumed that this section is the only one dealing with public health. This represents the approach of the Framework to reduce the siloing of actions and increase collaboration.

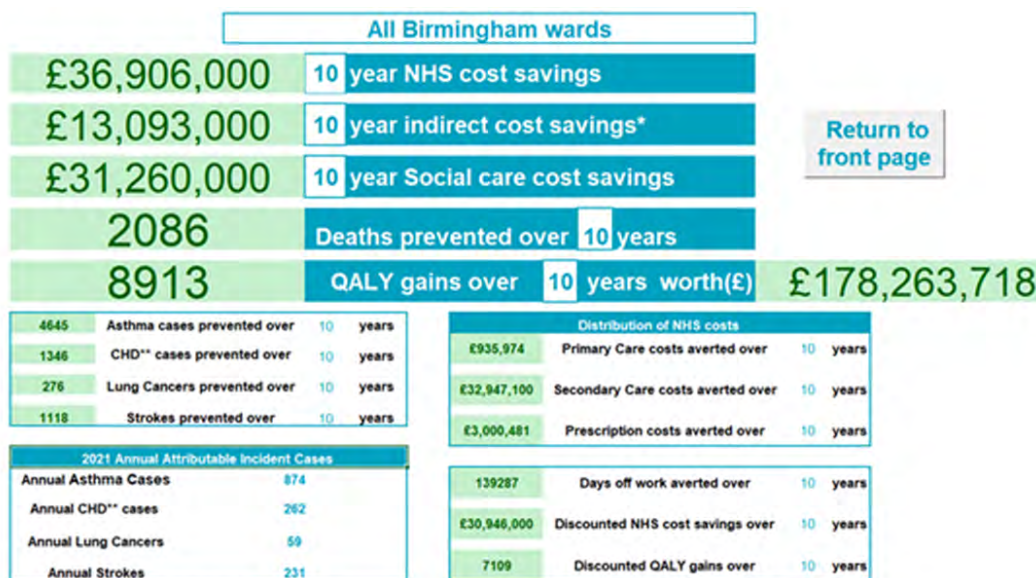
The Government has declared poor air quality as the largest environmental risk to public health in the UK. It has long been recognised that health outcomes are largely determined by the conditions in which people are born, grow, live, work and age. Air pollution impacts health directly and is one such ‘wider determinant of health’ with implications for quality of life among those living in the WMCA area. The impact of poor air quality with the West Midlands is unequal and therefore those who have pre-existing, and long-term health conditions are disproportionately affected. As such, improving air quality should realise tangible benefits to health and the costs associated with delivering and managing the healthcare for those most affected. Based on the latest evidence³⁶ from the Committee on the Medical Effects of Air Pollutants (COMEAP) and WM-Air modelling data, particulate air pollution is estimated to be responsible for up to 2,300 early deaths per year in the West Midlands³⁷.

There are several partners who have established public health work within the West Midlands. One example is the WM-Air project, which has specific health strands and is developing tools and assessing the real-world impact of air pollution on health. More local authorities are also taking on increased air quality responsibilities within their public health functions (SaMBC is one example where the air quality officers sit within public health), however a joined-up approach between all of those responsible for air quality and health is key to improving public health in the West Midlands.

Case study: Public health impacts of air pollution in the West Midlands

The WMCA has a population of approximately 2.9 million people, but life expectancy varies across the region, impacted in part by environmental pollution and air quality. Recognising these differences across the West Midlands, [WM-Air](#) researchers have developed the Air Quality-Lifecourse Assessment Tool ([AQ-LAT](#)), which uses local population and health data to better understand how the impacts of poor air quality are patterned across the region. The ward-level tool also enables appraisal of regional policies to understand where, and to what extent, health and monetary gains will be achieved from a given reduction in air pollution.

Applying the AQ-LAT, researchers have estimated that air pollution in the WMCA area contributes up to 2,300 early deaths each year. Pollution also increases the risk of long-term health conditions, including over 2000 new asthma diagnoses among adults and children. Reducing pollution to within WHO 2021 Global Air Quality Guidelines would gain ~130,000 years of life for the WMCA population over the next 20 years; with most benefits experienced in Birmingham and Sandwell. These improvements would generate economic savings exceeding £3.2bn over the next 20 years.



*Indirect costs reflect the time off work owing specifically to death-related absence, does not include productivity and care costs
**Coronary Heart Disease

Image: AQ-LAT dashboard showing example figures for Birmingham

Table 7.6.1: Public Health Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Roll out tools to warn and update residents of poor air quality and supported by regional/local healthcare system.	PH1	1 (4.10)	Increase awareness of air quality and associated health issues through existing health channels and a tool to help more vulnerable residents reduce their exposure at key times.	Reduce the impact of any times where there are heightened concentrations to those who are at risk and/or have underlying health conditions. This would need to be inclusive to not exclude those who are not digitally literate and would need to be supported through healthcare providers. The tools would need to both warn and outline measures to mitigate risk where required. A potential alert system for residents is being discussed by some local authorities, which would provide more of a local tool than the national system.	Convene	£100-250k; and 1-2 Years
Develop tools to reduce exposure to poor air quality outside of the home, such as journey planners linked to pollution modelling and real time data.	PH2	2 (4.05)	Reduce exposure and increase the awareness of air quality.	With increased promotion of active travel and public transport, there is the potential for increased transient exposure to pollutants when moving around outside the home. A West Midlands route planner that includes public and active transport and includes modelled and/or real time concentrations to provide alternative routes which would reduce exposure. This can also include a 'tolerance' setting where you could set it to just allowing quick detours to avoid the highest concentrations or to allow you to avoid major roads, at the expense of journey time for when you have more time and can use it as an opportunity for exercise.	Lead	£100-250k; and 1-2 Years
Research into the real-world exposure of West Midlands' residents (including the differences in exposure based on age and socio-economic situation) and what measures can be effectively implemented based on the findings.	PH5	3 (3.95)	Assess in more detail who is being exposed to what pollutant concentrations and target measures to reduce any disparities that exist.	Having more insight into real world exposure will allow for the targeting of measures to the areas which need it most. Such research should not discount time spent in exposure hotspots and the impact the exposure has, e.g., public transport hubs/children in cars being exposed more.	Convene	£100-250k; and 2-3 Years
Introduce a West Midlands schools accreditation and education scheme for air quality.	PH4	4 (3.80)	Increase awareness and air quality outcomes through greater standardised school participation, but still allows for local variations.	A West Midlands schools accreditation scheme would need to be both consistent, yet flexible. Having a consistent set of metrics, measures and resources is likely to improve uptake and effectiveness, but there needs to be flexibility in what is being offered as, depending on the setting, different things may be required. For example, there may need to be changes to active transport aspects between urban and suburban areas. Metrics to be used for the accreditation could include roll out of air quality education, transport planning, wider engagement, STEM and making changes to reduce emissions and exposure. Any engagement should complement and enhance the curriculum and be shaped through engagement with schools and educational authorities. There is the potential for working with existing schemes such as Modeshift to benefit both air quality and active travel.	Convene	£100-250k; and 2-3 Years
Develop a toolbox of measures that local authorities can easily implement and have pre-packaged communications packages that local authorities can use to promote the measures.	PH3	5 (3.60)	Enable effective (in terms of cost, time and outcomes) engagement which is easy to deploy and leads to behaviour change.	Having a package of approved and consistent measures that are ready to go is likely to improve the effectiveness of communications and how often they can be deployed. This would also make running concurrent campaigns much easier for comms teams as the packages are pre-approved and are ready to be deployed.	Lead	£100-250k; and 2-3 Years



7.7 Planning, policy, governance and mechanisms for change

This section outlines the options that cover planning, policy, governance and the mechanisms for change. Air quality is one of the material planning considerations considered as part of the planning decision making process and therefore, there are mechanisms that can influence air quality. Although the WMCA does not have any formal planning powers, it is able to convene and enable elements relating to planning, policy and governance. Having consistency wherever possible across the West Midlands will be key to improving air quality as quickly as possible. This is expected to have a range of benefits for the local authorities including reducing the time burden on officers, being more cost effective and more likely to produce results.

There are a range of proposed changes to how air quality could be considered within the planning process and achieve better air quality outcomes for the West Midlands. One major area is assessment best practice/guidance and its subsequent application varies across the local authorities. Much of the current guidance (such as the West Midlands Low Emissions Towns and Cities Programme) is not up to date and is falling behind in terms of methodology and using the planning process to shape air quality. Some Local Authorities are implementing more up-to-date guidance, however for maximum benefit, there should be a regional approach to assessing air quality within the planning process. It should be noted that this is reliant on DEFRA releasing the proposals for PM_{2.5} assessment going forward, as proposed within the Environmental Improvement Plan 2023.

There are also distinct synergies with other aspects within the planning process (such as energy, climate and net-zero) and establishing what can benefit and harm air quality and making the appropriate decisions within the planning process is important. Not all the options relate to the planning process and policy, and there is the potential for the WMCA to optimise some aspects such as:

- Upskilling and training for local authority officers and members
- Provide grant and project co-ordination to ensure the West Midlands attains funding where possible
- Provide a platform to co-ordinate air quality improvements across the region and reduce the duplication of work

As such, the aim should be to promote and enable better ways of working to make sure that these typically more cost-effective measures can have such a great impact on air quality and health.





7.7 Planning, policy, governance and mechanisms for change

Case study: Public health impacts of air pollution in the West Midlands

Birmingham City Council and the [WM-Air Project](#) team at the University of Birmingham have co-developed a Climate Risk and Vulnerability Assessment (CRVA) tool that will help communicate climate vulnerability across the city. Climate resilience is a key component of the city's corporate risk strategy, and the CRVA map provides the means to consider this risk during city planning and design, and to identify areas and communities who will be most, and least, impacted by climate risks. The map of Birmingham uses publicly available data from a variety of sources, scoring 100m grids across each layer, which are then summed to provide the overall CRVA score. The CVRA map identifies those areas of greatest climate risk and vulnerability, and will feed into investment prioritisation decisions and support climate-sensitive development. The CVRA map is also being used for Carbon Disclosure Project reporting commitments.

Air quality is included as two layers within the CVRA map. Including air quality is fundamental to the approach to ensure that air quality implications are considered at the earliest stages of the planning process, as highlighted in the [WM-Air Urban Design for Air Quality guidance note](#). There are many co-benefits of design interventions such as increasing green space or tree canopy cover in tackling liveability, climate and air quality issues.

The adoption of the CRVA tool – which is [available to view at ward-level](#) - should place Birmingham as a global leader in transparency and bold climate action. The University and Birmingham City Council have [published the CRVA method](#) so that other Local Authorities or regions can produce their own CRVA tool.

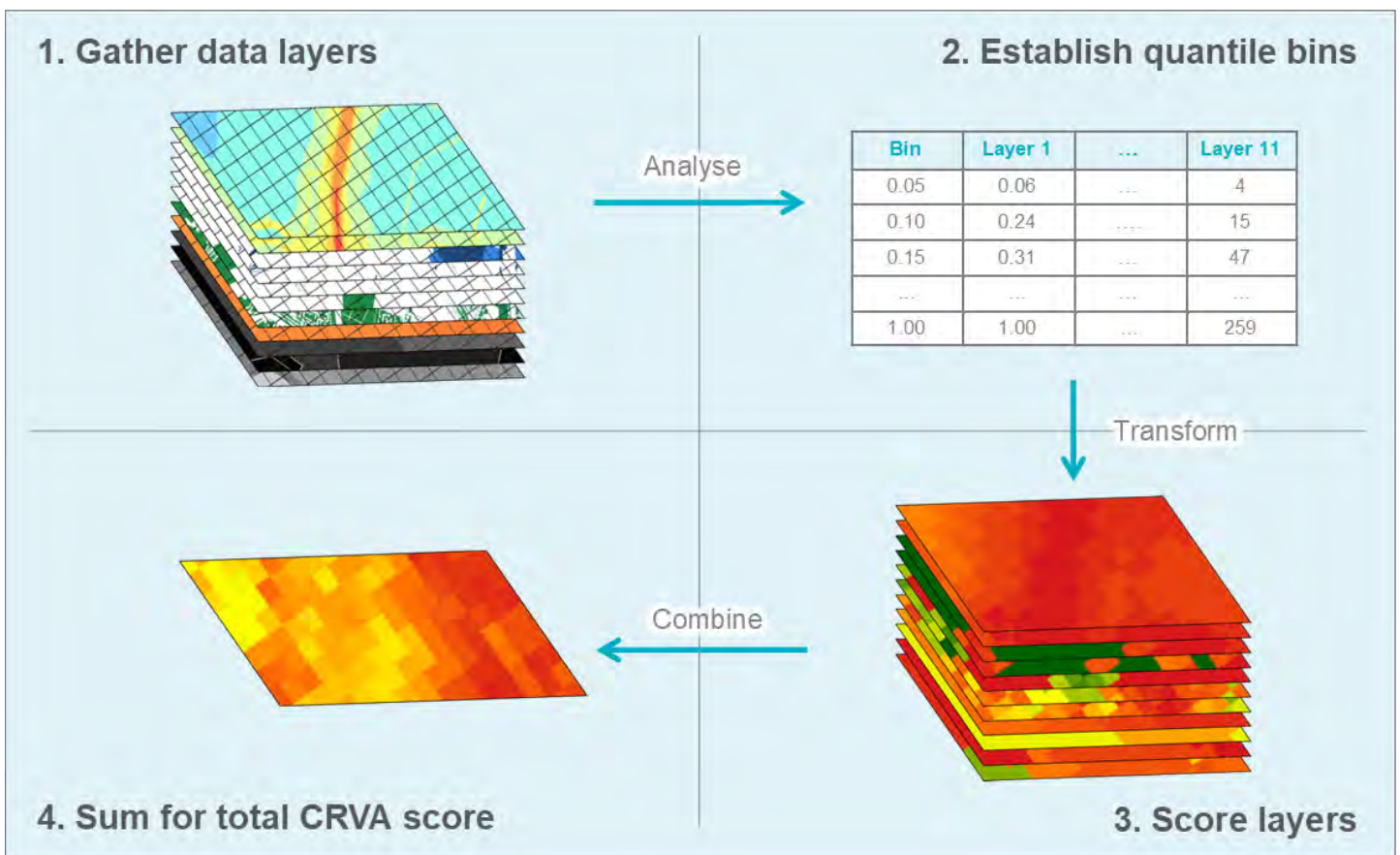


Image: Multiple layers of data are converted and combined to create a single CRVA map layer

Table 7.7.1: Top 10 Planning, Policy, Governance and Mechanisms for Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Introduce air quality neutral and/or air quality positive assessments into the planning process across the West Midlands.	PPG2	1 (5.90)	Have air quality as a greater design and planning consideration by providing more stringent assessment and design requirements. This will have both impact and exposure benefits and aid in ensuring widespread cumulative development is adequately controlled and assessed.	Through the setting of 'benchmarks' in the case of air quality neutral, the cumulative impact of all developments can be reduced, and more stringent standards set in terms of trip generation and parking. Such benchmarks would need to be locationally specific to account for variations in public transport accessibility and other barriers to transport. An air quality positive approach would aim to leverage air quality benefits on larger scale developments by requiring air quality to be considered as a core part of the development and design of a development. This would also include the minimising of exposure and a core outcome would be to demonstrate what measures have been taken to achieve the best possible outcomes for air quality. Both methods elevate air quality further up the agenda in the design and planning process and will have clear benefits.	Convene	£50-100k; and 2-3 Years
Scope for a "Net Health Gain" principle.	PPG5	2 (5.60)	Embed the requirement for air quality and health improvement within the planning process to reduce cumulative development degrading health and the environment.	Potentially differing slightly from air quality neutral/positive, net health gain could cover a wider range of considerations outside of air quality. It would mean that any new development or proposal for change to existing development should deliver an overall benefit to public health. As such, any new development should be 'clean' by design. For example, a development could be designed to promote active/public transport, access to green space, provide on-site facilities and provide full access to EV charging across the site.	Enable	Officer time only and/or below £50k; and 1-2 Years
Establish a region wide planning and design for air quality best practice document which will be kept updated with local, regional and national changes in guidance and legislation.	PPG1	3 (5.50)	A more homogenous approach to the assessment of air quality across the region to promote and enforce air quality improvements over and above what may be required nationally.	This will supersede various documents and be designed in a way which each local authority can add their own specific sections in, but will include aspects such as air quality assessments, damage cost calculations, air quality positive design, site suitability assessment and mitigation. However, it will need to be consistent in key areas to ensure that assessment undertaken is somewhat standardised and kept up to date with guidance and regulation changes. Some local authorities are updating guidance, so as soon as new PM _{2.5} assessment guidance is published (and alongside any other developing areas such as net health gain and health-based impact assessments), there should be an effort to agree assessment elements through the production of a document that can be used across the region. Green infrastructure and urban heat island considerations should influence heating and ventilation standards that work for all planning aspects (overheating, acoustics, air quality etc.).	Lead	£50-100k; and 2-3 Years
Including Health Impact Assessments (HIA) in planning applications and containing air quality.	PPG8	4 (5.35)	Identify and optimise the health and wellbeing impacts of planning.	HIA is a method of systematically identifying the impacts of plans and projects, inform recommendations to promote and protect health and wellbeing and narrow inequalities. It has a wide-ranging brief with some aspects similar to air quality positive but does so over five stages. Given the health impacts that air quality has, it should be a core component of any HIA guidance.	Convene	£50-100k; and 1-2 Years
Promote district heat networks (using heat pumps) for large developments.	PPG9	5 (4.90)	Centralise the generation of heat within developments to reduce emissions and both indoor and ambient exposure.	A district heat network would remove the requirement for each household/unit to have a boiler or heat pump. As such, it may provide more a more efficient heating solution. This includes lower costs for users and benefit air quality and the climate.	Convene	£50-100k; and 1-2 Years
Move away from the IAQM assessment criteria to both more stringent thresholds for detailed assessment and using health-based assessment for the quantification of impacts.	PPG11	6 (4.80)	Reduce the standalone and cumulative degradation of air quality by using more stringent and applicable metrics.	Currently, air quality assessments are compared against impact criteria, which considers changes in concentrations relative to an objective. Typically, professional opinion is used to determine if impacts are significant. If impacts are determined to be negligible, no mitigation is typically required outside of what is outlined in other planning policies. Concentrations that are below 75% of the objective require more change relative to the objective to realise an impact that is not 'negligible'. As such, there is no driver to reduce impacts and improve health outcomes and the cumulative impact of many developments can be missed. The IAQM criteria has not been revised following changes to the future PM _{2.5} targets.	Convene	£50-100k; and 2-3 Years
Provide centralised support for local authorities in areas such as local plan policy to promote consistency and dealing with more complex air quality assessment methodologies.	PPG3	=7 (4.20)	Promote consistency and accurate decision making by local authorities through upskilling and support.	By providing expert support on complex air quality matters, local authorities who have less air quality specialism/those who don't solely work on air quality are not disadvantaged when it comes to decision-making on-air quality. This will also promote consistency within the local authorities.	Lead	£250-500k; and 2-3 Years
Use mechanisms (such as future local plans) to enforce more stringent regional air quality limits/compliance timescales.	PPG4	=7 (4.20)	Use proposed NPPF change to enable evidence-based policies to go above and beyond legislation to improve air quality in the West Midlands.	Given there are already expressions of interest to go above the 2040 PM _{2.5} targets, using planning mechanisms to either set more ambitious targets or to reach compliance in a shorter period will have a benefit to health. This would require regional co-operation on guidance, standards, and processes to ensure that development aids any aims.	Convene	Officer time only and/or below £50k; and 3-4 Years

Table 7.7.1: Top 10 Planning, Policy, Governance and Mechanisms for Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Develop guidelines for best practices for procurement that will support air quality improvements (e.g. use of Non-Road Mobile Machinery).	PPG6	=9 (4.10)	Improve air quality through the procurement of less polluting options.	Produce guidance that can be adopted within procurement processes to ensure that air quality outcomes are a consideration. This can then be used both internally and externally to promote air quality as a greater consideration, especially if more stringent standards are implemented at some point.	Enable	Officer time only and/or below £50k; and 1-2 Years
Provide guidance on how planning will consider the air quality and climate/net zero co-benefits and disbenefits within the planning process and are addressed in a joined up way by officers.	PPG13	=9 (4.10)	Have planners and officers responsible for specific areas to discuss co-benefits/disbenefits of specific scheme aspects to better assess applications.	There will be some interplay between disciplines when considering climate and net zero. Some actions which are beneficial to net zero goals may not benefit air quality and therefore have an impact on the health of local residents. There will also be instances where a changing climate has an impact on overheating, so that along with other areas such as acoustics, wind and outdoor/indoor air quality will need to work together. Mitigation requirements should suit all areas when feasible, and solutions are worked out when there are conflicting requirements.	Convene	Officer time only and/or below £50k; and 1-2 Years

Table 7.7.2: Selected Planning, Policy, Governance and Mechanisms for Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Have a platform for WMCA and local authority officers to share ideas and plans for engagement to ensure that regional roll outs can happen, facilitate knowledge sharing and leverage combined procurement where applicable.	PPG17	11 (4.05)	Improved communication and collaboration to reduce the time burden and improve the effectiveness of air quality interventions.	This could take the form of a restricted access collaboration platform so that air quality officers can exchange ideas and coordinate air quality campaigns. There are some instances where plans for air quality are not shared until further down the line, when it may have been possible to join up and improve the campaign. By highlighting potential ideas and strategies which sit outside of the usual work, it is hoped that a wide range of benefits can be achieved. This can then also be used for grant co-ordination and procurement.	Lead	Have a platform for WMCA and local authority officers to share ideas and plans for engagement to ensure that regional roll outs can happen, facilitate knowledge sharing and leverage combined procurement where applicable.
Continue to roll out school streets programmes to reduce traffic and emissions in the vicinity of schools when there is transient exposure.	PPG14	12 (3.90)	To reduce emissions and exposure in the areas around schools and create opportunities for engagement and behaviour change with the school community.	Having school streets programmes that are understood and enforced will reduce short term hotspots where there will be transient exposure of young and potentially vulnerable people. This can also be a mechanism for wider engagement on air quality within the school community and be used to educate adults on air quality and the impacts it has. When properly implemented, there should be active travel benefits, but the impacts of programmes on the surrounding area should be considered and alternatives explored if required.	Enable	Continue to roll out school streets programmes to reduce traffic and emissions in the vicinity of schools when there is transient exposure.
Co-ordinate regional air quality upskilling and knowledge share for air quality officers.	PPG20	13 (3.85)	Enable air quality officers to be able to have specialism in a wider range and more niche areas of air quality to ensure correct decisions and actions are made.	This could be facilitated through another option outlined within this section (such as an air quality assembly) or as a separate option. There is already extensive knowledge on most areas within the West Midlands, but these could be supplemented by partners providing information on topics. This could be in person, or in the form of interactive online sessions to reduce the travel and time burden.	Lead	Co-ordinate regional air quality upskilling and knowledge share for air quality officers.
Provide grant and project co-ordination through the WMCA to ensure that there is consistency across the West Midlands and procurement is effective.	PPG18	15 (3.70)	Increase the access to and efficiency of grant applications, plus the coordination of procurement to gain associated benefits.	Securing the DEFRA air quality grant demonstrates it is possible for large funding bids to be co-ordinated by the WMCA. This reduces the burden on local authority officer time and allows for both greater scope and consistency. This could be set up more formally alongside other options set out within this section or on an ad hoc basis based on funding schedules.	Lead	Officer time only and/or below £50k; and <1 Year

Table 7.7.2: Selected Planning, Policy, Governance and Mechanisms for Change Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Have a centrally managed regional air quality assembly to provide support, guidance and co-ordination for local authorities and to ensure where possible, there is consistency, open communication channels and leveraging opportunities for funding etc.	PPG15	=18 (2.90)	Increase communication, support and collaboration between local authorities which will promote better air quality outcomes, along with other benefits.	The current West Midlands Environmental Protection Group (WMEPG) covers air quality as a core component, but as it covers a range of disciplines (such as contaminated land, LAPPC) and is focused on regulatory/LAQM aspects. As may not be the best mechanism to drive the aims of an air quality assembly. As such, a complimentary assembly to drive aspects within this PPG section will be more focussed to drive forward changes. Periodic in person meetings of the core assembly would allow for more in depth and focused meetings and for the discussion of issues which aren't possible in other forums.	Convene	Officer time only and/or below £50k; and <1 Year
Coordinate regional approaches to government on policy and resources to tackle air quality challenges (DEFRA, HMT and key partners, e.g., Environment Agency, National Highways).	PPG16	=18 (2.90)	Where possible coordinate responses to best represent the best interests and improve the profile of the West Midlands.	By increasing the profile of the work and interests of the West Midlands, this should result in better outcomes, more of a say on policy development and even autonomy on some aspects. This would need to be organised and new communication channels opened to effectively community and co-ordinate quickly on responses.	Lead	Officer time only and/or below £50k; and <1 Year
Provide training for members/ decision makers/local authority officers through a standalone air quality literacy training programme to ensure they are up to date on air quality matters.	PPG19	20 (2.85)	Increase the knowledge and awareness of the public health and environmental issues associated with poor air quality. This should help achieve greater consideration and better air quality outcomes when decisions are made.	Through the DEFRA air quality grant, a module is being created to upskill people on air quality and the wide-reaching effects it has. This will be similar to the carbon literacy programme that is already being run by WMCA.	Lead	Officer time only and/or below £50k; and <1 Year



7.8 Monitoring and digital

Monitoring has such a key role within air quality as it impacts many areas including planning and policy. The requirement to monitor key pollutants as part of local authorities LAQM responsibilities means that many local authorities have an extensive evidence base on pollutant concentrations. Now there is an increased focus on particulate matter (particularly $PM_{2.5}$) the monitoring landscape is undergoing a major change from using primarily low-cost passive methods for NO_2 (such as diffusion tubes), to requiring more costly $PM_{2.5}$ automatic analysers and utilising low-cost sensors. In comparison to diffusion tubes, low-cost sensors are much more expensive and require continual annual costs after purchase. However, they do have similar drawbacks when compared to the more costly automatic monitoring – they are not as accurate. Some low-cost sensors (such as the EathSense Zephyr and the South Coast Science Praxis/Urban) have been awarded MCERTS for indicative measurement of dust in ambient air. As such, they can be used as a key indicative tool to understand the relative concentrations and use them as an engagement tool, but they are not yet able to be used for LAQM purposes/for determining compliance.

With the increased focus on digital and data, being able to capture widespread air quality data in real time through a network of low-cost sensors presents an excellent opportunity. Such opportunities include:

- Use as an engagement tool through a West Midlands air quality website, a visual talking point and highlighting issues by placing monitors in homes;
- An increase in citizen science and science, technology, engineering, and mathematics (STEM) applications;
- Enable a local air quality warning service and rapid modelling capabilities;
- Improve the granularity of source apportionment studies; and
- Identify particularly key pollutant sources and the potential impact on receptors

As part of the increase in low-cost sensor usage, there will need to be regional co-ordination and guidance on their application and use. National guidance on low-cost sensors is due to be published by DEFRA shortly, but in the meantime, careful planning is required to ensure that when deployed, the sensors provide data which has a purpose. Being able to leverage this data is important, so having widespread access to processed data will provide opportunities for research and STEM use.

Case Study: West Midlands Sensor Network

The WMCA has secured the funding to install a regional sensor network, enabling the roll out of low-cost sensors (accredited to iMCERTS) that will measure a range of pollutants, including $PM_{2.5}$ and NO_2 . These will complement the existing network of both reference equivalent and low-cost air quality sensors that have been installed by the local authorities.

Importantly, we see the installation of low-cost sensors as an opportunity to be able to make ‘real time’ data on air quality available to everyone across the region, from local authorities, to business, to universities and communities. This will be via a dedicated web platform that will also provide information and news updates related to air quality issues.

To date, due to the high cost of reference equivalent analysers, the wider picture with regards to $PM_{2.5}$ in particular has relied on modelled data, rather than information that is being collected from locations across the West Midlands. By installing sensors and following a consistent set of standards for the network, we will be able to better understand the regional air quality issues as well as the impact that the different measures are having on improving local and regional air quality.



7.8 Monitoring and digital

Case Study: Air Quality Monitoring in Schools to engage, inform and educate

In January 2022 Birmingham City Council launched its first Clean Air Strategy (CAS) for the city of Birmingham. This innovative strategy seeks to improve air quality across the city and not just in areas where air pollution concentrations are traditionally high. The launch took place at Lea Forest School and was undertaken in conjunction with the first discreet project under the CAS; Air Quality Monitoring in Schools (AQMiS).

The AQMiS project seeks to raise awareness of air pollution amongst primary and secondary school students and teachers and by extension amongst parents. The aspiration is to inspire a culture of behavioural change both in terms of influencing the choice of mode of transit to school and in wider lifestyle choices.

Working in partnership with Airly the City Council has provided schools across the city with indicative air quality monitors. The sensors provide real-time air quality data for nitrogen dioxide, particulate and ozone. The monitors include a coloured light which provides a visual indicator of the level of pollution using an air quality index ranging from green to red.

The monitoring solution is also supported by a publicly accessible online platform <https://airly.org/en/> and App (available on Apple and Android devices). The platform incorporates a location map which can be used to view the pollutant data in near real time. The project is also supported by provision of educational resources which the schools can use to promote student learning and ultimately engender behavioural change.

The first phase of the project began in early 2022 which aimed at installing 70 sensors across the city. The second phase of the project which is due to be rolled out in the latter half of 2023 aims to expand the offer to every school in Birmingham and will be funded through the Transport and Environment CAZ Programme.

This project ties in with the Council's vision for the CAS to be relevant across the wider city and to not just focus on areas where air quality is traditionally recognised to be poor. This is underpinned by the Council's pledges within the CAS around collaboration, clean air for schools, protecting the vulnerable and measuring progress.



Table 7.8.1: Monitoring and Digital Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Use a centralised West Midlands air quality network website as a data store to enable various analyses such as trends and the quantification of the impact of air quality measures.	MON4	1 (3.40)	Improve access to air quality data to aid areas such as research, planning and evaluation. Collation of information and engagement information into one location.	Easy access to data from a large range of sources aids data analysis, which can enable better decisions to be made. An example where a datastore would be helpful is where it could better enable the assessment of "exposure reduction" and prioritisation of measures to reduce environmental health inequalities. This option will be initiated through the delivery of the DEFRA funding secured.	Lead	£50-100k; and <1 Year
Establish a West Midlands wide low-cost sensor network, with an associated standalone website that includes existing regional data, enable other systems (such as an alert system) and air quality information that is effective for behaviour change.	MON1	2 (2.90)	Use low-cost sensors to gain better spatial resolution on particulate concentrations and tie them in with a centralised air quality resource to promote behaviour change.	This is an in-progress option supported through a DEFRA air quality grant. This will look to use air quality monitoring as a behaviour change tool and the groundwork for a larger scale collaborative network. A number of local authorities already have low-cost sensors deployed and the data is spread across a number of websites. Therefore, having the data in a central location will aid public access and collaboration will aid standards, reduce costs, and officer time burden. A regional alert system could benefit from the use of low-cost sensor data, with potential systems for residents being discussed by some local authorities, it would provide more of a local tool than the national system. Smart hubs could be installed at key locations (such as schools and community/faith centres) to boost engagement and awareness of air quality.	Lead	£250-500k; and <1 Year
Understand the relative importance of within-region emissions and transported air pollution for WMCA air quality.	MON5	3 (2.20)	By knowing the different contribution from within region and external pollution, it will be possible to targets specific sources and seek partnerships with other regions to address specific emission sources.	This work is already underway through the WM-Air project. The outcomes can be used in future decision making when assessing the applications of options.	Enable	£50-100k; and <1 Year
Understanding real-world emissions to underpin policy, e.g. identifying largest emitters across actual WM fleet (all vehicles).	MON6	=4 (1.95)	Use real world data to understand emissions from various sources and to target policy and interventions.	This work is already underway through the WM-Air project. The outcomes can be used in future decision making when assessing the applications of options.	Enable	£50-100k; and 1-2 Years
Establish regional standards on air quality monitoring covering all monitoring types to ensure that the data being acquired is robust and the equipment used is to a minimum standard.	MON2	=4 (1.95)	Improve the quality of the air quality data collected throughout the West Midlands by following agreed standards/guidance.	Having set regional standards on all monitoring will help officers when making decisions on monitoring and for developers/consultants when required. This may include considerations to make sure campaigns are more considered of outcomes and how these can be monitored/evaluated when required. Currently there is a range of sensors that are deployed, and some are not accredited to a formal standard. Therefore, they are more of a pure engagement tool, rather than both an engagement tool and allowing for some indicative data collection that can be used for other purposes. This will also be helpful when it comes to navigating the vast numbers of low-cost sensor solutions flooding the market at very low cost.	Lead	Officer time only and/or below £50k; and 1-2 Years
Establish a pathway for streamlined procurement of air quality monitoring equipment and resources to both leverage economies of scale and ensuring that the correct equipment is purchased based on the regional standards.	MON3	=4 (1.95)	Reduce costs, officer and lead time through a streamlined procurement process which allows access to the equipment that is actually needed and compliments the existing monitoring operations.	This option should ideally be combined with governance reforms; however, it is something that has been requested multiple times so could be done as a standalone option. One reason for this is that procurement is sometimes local authority procurement processes are too focused on price and not at getting what is genuinely the right solution for the task. Another is to leverage economies of scale to get a better deal and the ability to negotiate specifics such as KPIs in a better way if there is collaboration on what is required etc. when going out to tender.	Lead	Officer time only and/or below £50k; and 1-2 Years



7.9 Climate and Net Zero Considerations

Tackling air quality and climate change are not the same, but there are clear synergies in measures that might be put in place to address them/their causes. In particular, they are both the result of fossil fuel combustion (through transport, power generation, heating and industrial processes) as well as some agricultural activity. Further, research is indicating a clear correlation between health impacts where both temperature and $PM_{2.5}$ are raised and work is continuing to understand this in more detail through a study that will be taking place in the West Midlands, funded by the Wellcome Trust, over the next few years. What is clear is that air quality should be included in ‘whole system’ approaches to tackling climate change; the WMCA-led Net Zero Neighbourhood programme is taking this approach as part of its delivery.

Case Study: Improving air quality in Brockmoor through the Net Zero Neighbourhoods Programme

Brockmoor, Dudley is set to be the first Net Zero Neighbourhood in the West Midlands. This is part of a place-based approach being piloted by the Energy Capital team at the WMCA that aims to test if a neighbourhood approach could be successful at helping to increase the scale of engagement in Net Zero.

Dudley MBC and partners will spend the next two years working closely with the people of Brockmoor to co-produce low-carbon and sustainability interventions to enable a Just Transition in Brockmoor. These will include:

Extensive community engagement work, led by project partners Keele University aims to promote resident participation and collective ownership in encouraging behaviour change to improve neighbourhood air quality and related health outcomes.

Energy Capital and Dudley MBC will be baselining, monitoring and evaluating the impact of the Net Zero Neighbourhood on Brockmoor amongst which will be measuring the impact of the approach on local air quality and associated changes in behaviours and travel patterns.

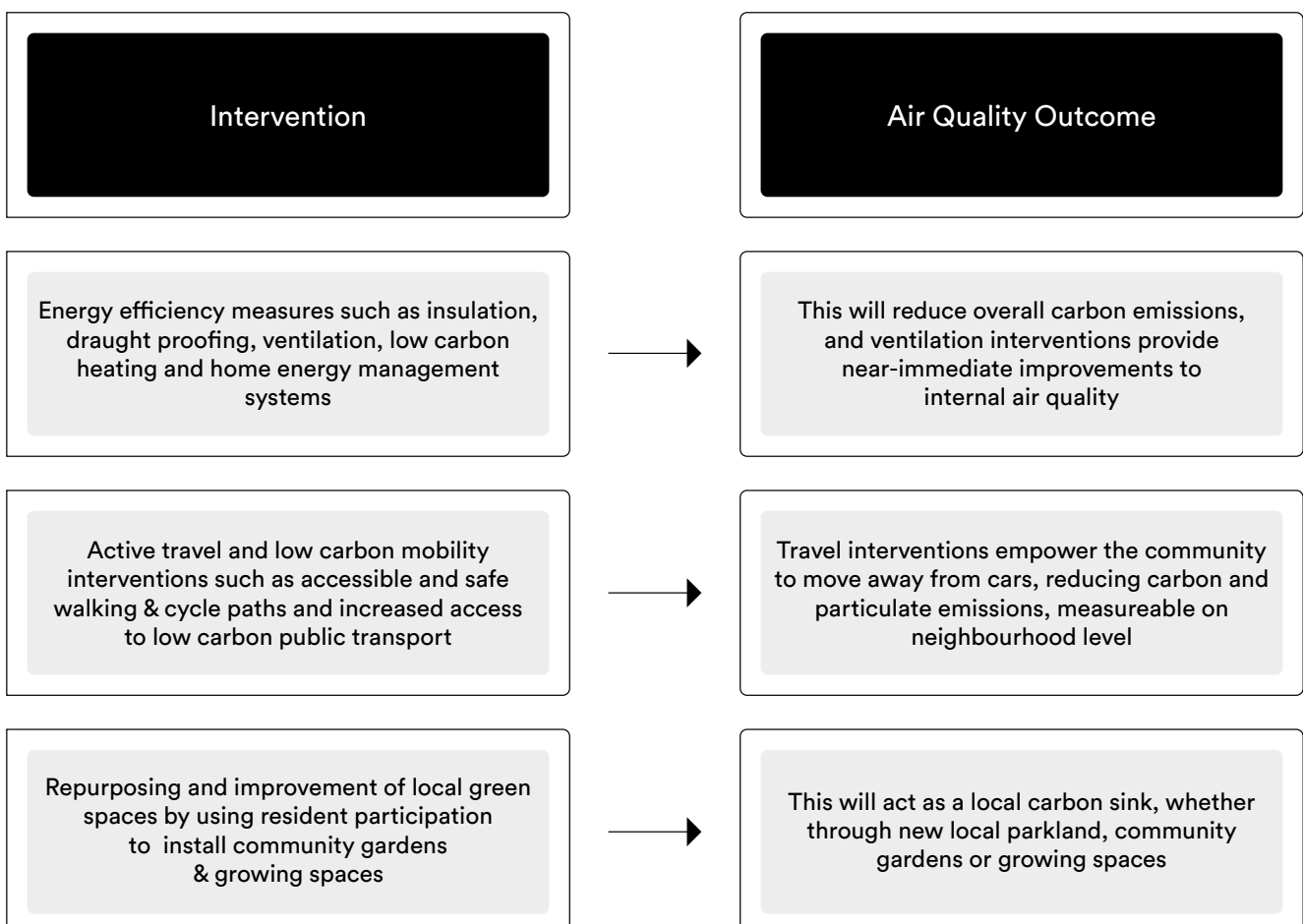


Table 7.9.1: Climate and Net Zero Options Ranked by Weighted MCDA Score

Option	Framework Option Code	Theme Rank (Weighted Score)	Targeted Outcome	Potential Approach	Proposed WMCA Role	Estimated Initial Costs and Timescales
Air quality innovation zones to sit alongside other programmes such as net zero neighbourhoods and industrial decarbonisation programmes.	CNZ3	1 (4.35)	Leverage other established/ proposed programmes with complimentary air quality actions to test out interventions and the impact coordinated measures can have.	Aligning with measures, such as net zero neighbourhoods, will allow for a test bed for both measures which have air quality as an added benefit and pure air quality measures which have an added net zero benefit. The trialling of such schemes will allow for the monitoring and assessment of the impacts which will be valuable when it comes to more regional application.	Lead	>£1m; and 3-4 Years
Engage with large transport providers such as rail/station operators and Birmingham Airport and promote greater integration of air quality into net zero and climate plans.	CNZ5	2 (3.85)	By using net zero to promote air quality improvement, there is a greater chance of improving air quality emissions and exposure from large transport hubs.	Many operators have pre-existing environment plans and strategies; however, air quality is a typically a small part behind other aspects such as climate and net zero. Engaging with operators to see where air quality could be integrated as a wider benefit within net zero and climate plans should help improve air quality outcomes and improve transient (short term) and long-term exposure. Existing relationships should be leveraged (such as Solihull with Birmingham Airport and Birmingham with New Street Station).	Enable	£50-100k; and 2-3 Years
Provide guidance on how the changing climate will affect air quality (and potentially other areas) and how this can be mitigated and be a co-benefit.	CNZ2	3 (3.30)	Provide guidance on how incorporate air quality within net zero and climate resilient designs to account for the changing climate.	A changing climate in the UK has the potential to have a major impact on air quality, especially when it comes to chemistry processes and mechanisms. The potential outcomes vary depending on the climate changes that occur; however, it can include more particulate matter and O3 episodes during heatwaves; increased secondary particulate matter formation; reduced removal of particulate matter with reduced rainfall; potential for more wildfires to contribute to regional pollution; and many more complex chemistry interactions. There will be increased clashes between different requirements such as ventilation and acoustics that may need different mitigation to that needed to fulfil air quality requirements (e.g. in the case of openable windows).	Enable	£50-100k; and 2-3 Years
Understand where air quality can be integrated into communications and programmes on solar/renewables/heat pump and used to highlight benefits and general air quality awareness.	CNZ4	4 (3.25)	Leverage the co-benefits of renewables and an improvement in both ambient and indoor air quality due to the reduction in domestic combustion.	Introduce the air quality narrative into renewables and alternative home energy strategies. This can include mentioning the local and regional air quality benefits and what this can do to improve public health and long-term finances. Indoor air quality benefits due to the move to electricity should be highlighted. Engage with suppliers, landlords, councils, and funding providers to ensure the messaging reaches the appropriate people.	Enable	£100-250k; and 2-3 Years
Metrics for improving air quality, to capture co-benefits from net zero actions and for policy to reduce regional health inequalities.	CNZ1	5 (2.50)	Appraise the potential for net zero actions to improve air quality and potentially prioritise measures which have co-benefits.	This could be carried out at the same time as other policy reviews so that such metrics could be published and included with any guidance which can then be supported by the relevant policies. Green infrastructure and urban heat island considerations should influence heating and ventilation standards that work for all planning aspects (overheating, acoustics, air quality etc.).	Lead	£50-100k; and 2-3 Years

8. Governance and Financing

To ensure that the Framework is delivering for the whole WMCA, we will establish an Air Quality Framework Delivery Group. The Group will have a core membership comprising the 7 constituent local authorities, WMCA and TfWM. This will also facilitate engagement with air quality partners (as identified in the Environment Act, 2021) as well as bringing additional expertise on board to support different air quality issues that are common to all partners.

Other relevant partners will either be included in the Framework Delivery Group itself or brought into task and finish groups to bring specific expertise forward as necessary. These additional partners could bring experience in relation to public health, environment, research and innovation. Suggestions made through the consultation process include:

- Public health (Directors of Public Health as well as the UKSHA)
- Local authority representation (air quality, behaviour change and net zero officers)
- Community group representation
- Political stakeholder (such as a member of the WMCA Environment and Energy Board)
- A member of the University of Birmingham's WM-Air Team
- Business representative
- Birmingham Airport
- National Highways
- National Express
- National Rail
- West Midlands Fire Service

Terms of reference for the Framework Delivery Group will be established with a proposal to meet quarterly. The task and finish groups will enable specific stakeholders to come together around focused/ technical issues such as planning, procurement or monitoring and data.

It is important that the Framework Delivery Group complements existing governance arrangements – this has been outlined in the **Figure 8**. This recognises that air quality is of interest to both the environment and transport portfolios at the WMCA. The incorporation of wider governance arrangements and their role within the Framework Governance will be agreed by the Framework Delivery Group.

Resourcing of the Air Quality Framework Implementation Plan will be critical for success. The DEFRA Air Quality grant, secured in March 2023, will support the implementation of some priority measures, especially in relation to behaviour change and establishment of a low-cost sensor network, and availability of data to support decision-making across the region. Bringing in experience from lessons learned in other project delivery, as well as consolidating the learning and sharing from projects delivered through the Framework Implementation Plan, will be key. The successful delivery of other measures will be dependent on resourcing and business cases and subject to the WMCA Board approval. Financing and investment into delivery will be a central element of the Framework Delivery Group work.

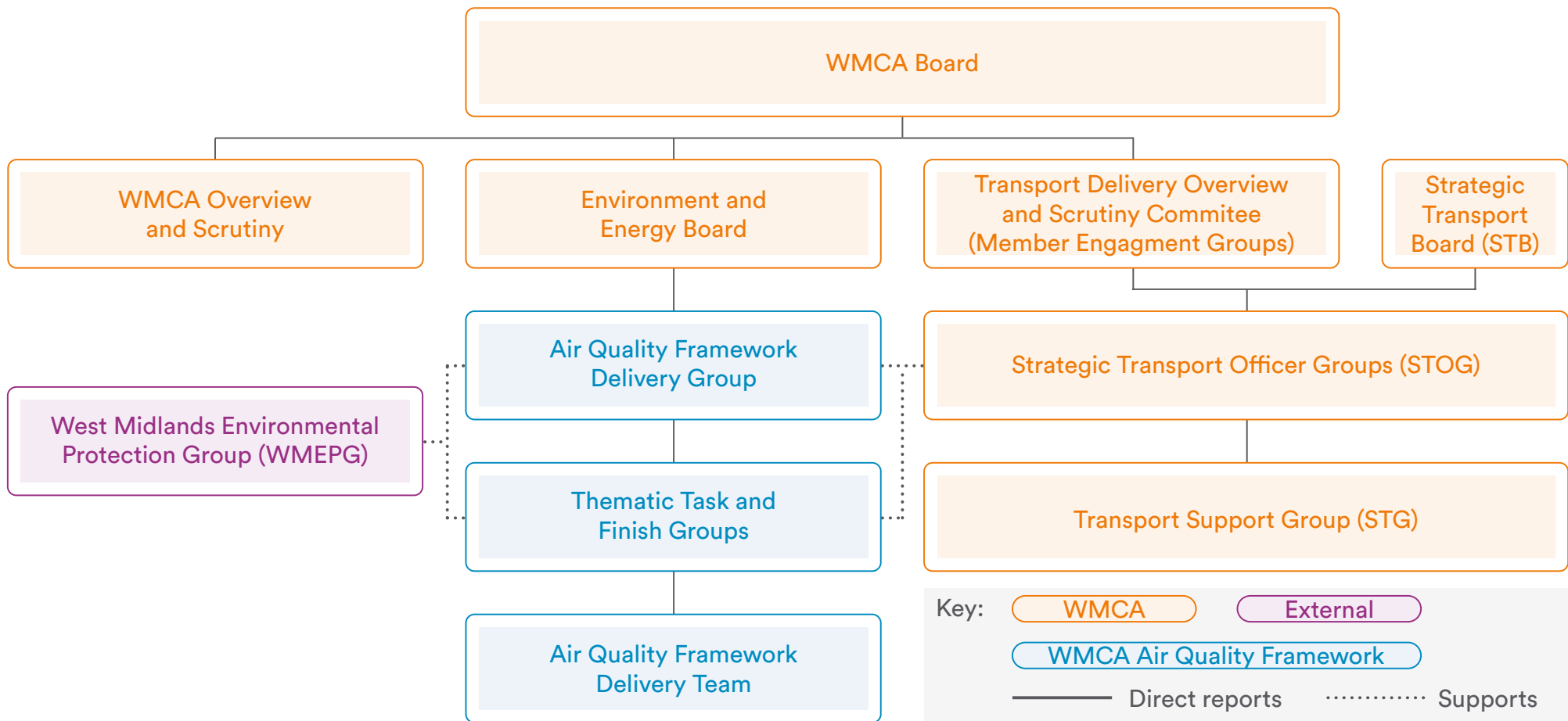


Figure 8: Proposed WMCA Air Quality Framework Governance Structure

9. Delivery, Ways of Working and Next Steps

The Framework Implementation Plan will be the primary document to guide delivery between 2024 and 2026. This provides both immediate actions, preparatory work for larger measures and additional details around requests for funding and resourcing. However, it is hoped that this document will help shape and deliver the longer-term ambitions of the WMCA and constituent local authorities.

We are committed to making the work delivered through this document and the Framework Implementation Plan as open and transparent as possible. The WMCA is in the process of developing an air quality website where progress against our different projects/programmes will be shared. This will include a map illustrating the location of sensors with near to real time data on air quality across the WMCA region. Constituent local authorities will be able to add data and shape the website where possible. We will also look to publish data through the WMCA Environment and Energy Dashboard (which will be live in 2024).

Monitoring and Evaluation

Throughout our delivery, we will be evaluating the success of our projects and programmes, measuring the success of air quality interventions (especially those that are small scale and of shorter duration) can be challenging. One of the main methods of evaluation expected by stakeholders and the public would be a change in pollutant concentrations; however, in some cases this is challenging due to changes in emissions (vehicle fleet changes, other non-related changes in behaviour), isolating the cause of the changes, meteorological conditions and other seasonal effects. It is possible to use techniques such as 'de-weathering' to try and isolate changes in concentrations without weather/seasonal impacts, however this is reliant on other variables (such as traffic flow remaining the same) and is not an exact science. In addition to air quality data, methods such as traffic counts, stakeholder feedback, surveys, public transport usage, automatic number plate recognition (ANPR), and walking and cycling counts can be utilised.

Given the diverse nature of our projects, there will not necessarily be a single approach to monitoring and evaluation; each project/programme will have its own methodology. However, for work packages and interventions that are implemented (and where appropriate), the required monitoring and evaluation will be agreed at the inception/business case stage. This will need to ensure that appropriate monitoring and evaluation is undertaken to both assess effectiveness and to provide an opportunity for learning lessons and applying what is learnt elsewhere.

There is the potential for a monitoring and evaluation toolkit to be agreed through the DEFRA behaviour change work and colleagues working on other major interventions (such as the Birmingham CAZ). This would set expectations and options for monitoring and evaluation of work packages and interventions, which will benefit not just the Framework, but ASRs and AQAPs, where DEFRA is expecting more robust monitoring and evaluation in the future.

There is also a commitment to provide regular updates to both the Environment and Energy Board, Transport Delivery Overview and Scrutiny and the Strategic Transport Board (outlined in the governance below).

Greener Together Citizens' Panel

The Greener Together Citizens' Panel has also developed several guiding principles for our air quality project implementation, and we are committed to working with these and the Panel hereon in. These are:

Cost and Responsibility: Air quality measures should be...

- Brave and bold.
- Clear and transparent in their purpose and, where they generate income, how this will be spent.
- Placing the burden of change on the broadest shoulders, ensuring that specific groups are not disadvantaged by higher costs and protecting the most vulnerable.
- Good value for money for councils so that council tax bills don't increase as a result.
- Putting public benefit before corporate interests and avoid monopolies being created.

Engagement, education and awareness: Air quality measures should be...

- Done with, not to, people; involving a range of citizens and areas in the design process.
- Explained clearly to the public, including why they are necessary and what impacts they are designed to have.
- Making people aware of changes taking place and with due consideration for accessibility, alternative provision and any support that may be needed.

Implementation: Air quality measures should be...

- Putting new services in place before removing old ones.
- Achievable, sustainable, measurable and long-term.
- Taking into account how impacts will be felt by neighbouring areas.
- Data-driven and evidence-based, learning where possible from other countries and other parts of the UK.
- Using incentivisation rather than punishment where possible and enable people to change their behaviour in positive ways.

These 13 guiding principles provide an excellent and wide-reaching checklist of what should be considered at various stages throughout implementation, although not all will be applicable to all interventions. The scale and purpose of a project is key to determining which should be applied. We will look to engage the Citizens' Panel on shaping specific projects and interventions as they are developed for deployment.

Bringing a representative group of citizens together is a powerful way to understand both acceptability and need for putting particular programmes and infrastructure in place, as well as to shape the way they are delivered. An initial report from the Greener Together Citizens' Panel on air quality is available here (web link to be inserted once initial report is finalised). For wider input and consultation, we also have the opportunity to discuss air quality related issues with the Greener Together Forum, a quarterly meeting open to anyone to attend.

Implementation and Action

The establishment of a Framework Delivery Group, ways of working and defined governance will guide the Framework programme forward in an efficient manner. This will ensure that there is representation from relevant stakeholders and that work is driven forward in a responsible way, whilst maximising outcomes across the West Midlands. More details on the Framework Delivery Group can be found in Section 8.

Some packages and measures will require additional assessment, consultation, and funding. As such, there are varied levels of targeted delivery within the two-years the Framework Implementation Plan covers. Typically, the implementation target for the larger and more complex packages and measures will be more towards feasibility and securing funding. This is to ensure that packages and measures are appropriately appraised for impacts, communities are consulted, and that resourcing is in place. This should not be seen as a lack of ambition, but as a drive to proceed with more complex action across the region as quickly as possible, in a way that is measured and can have the most meaningful impact. Detailed feasibility studies and business cases will also enable partner organisations such as WM-Air to assist with appraisal to quantify the changes in air quality, benefits to communities and optimise health and economic outcomes.

Many of the engagement and behaviour change, communications and monitoring and digital packages proposed within the Framework Implementation Plan can begin quickly and achieve early-stage to full implementation within the two-year period covered by the document. These packages have the potential to provide cost-efficient changes in behaviour that can reduce health impacts and make changes to reduce emissions. Through secured DEFRA funding and the Framework, the increase in regional cooperation and coworking will provide a strong base to implement the larger regional packages and measures in the shortest timescales.

Finally, any projects and programmes will be subject to sign-off through the **WMCA's Single Assurance Framework**.

Proposed Stretch Targets

Through the development of the Framework and consultation with stakeholders, there is a clear ambition to achieve more ambitious air quality targets than those set out in **Section 2** (and this includes the targets from the Environment Act, 2021). The first year of monitoring results post COVID-19 (i.e. 2022) shows that all monitoring locations are compliant with the 2040 PM_{2.5} target. Although the PM_{2.5} monitoring resolution is not high across the region, if roadside concentrations are compliant, then most areas can expect to be compliant. Given that there is no safe level of PM_{2.5} and there are clear benefits to going above and beyond the 2040 PM_{2.5} targets (including health, financial and for the regional economy), it should be a key target for the region.

The potential for 'stretch goals' was first raised at the July 2023 WMCA Environment & Energy Board, where one of the decisions was "...to pursue WMCA-wide air quality targets that exceed the nationally established targets". Following on from this decision, more ambitious targets were discussed with the Transport Delivery Committee Air Quality, Congestion and Environmental Sustainability Member Engagement Group (MEG). The MEG highlighted the importance of maintaining air quality as a high policy priority, even where legal levels for pollutants had now been met. The MEG recommended that the Transport Delivery Overview & Scrutiny Committee recommend to WMCA Board the following:

"WMCA considers adopting, as part of development of the Regional Air Quality Framework, stretch targets which are more ambitious in terms of timescales and pollutant concentration targets than the UK Government air quality targets, and which are closer to World Health Organization (WHO) guidelines for NO₂ and PM_{2.5}."

This would be a significant piece of work to complete, which would require the support of existing partners. This is expected to include WM-Air, who have developed and maintain a regional air quality model and are therefore best placed to provide future projections. This would determine what would be ambitious, yet achievable targets, the timescales in which they can be achieved and what would be required on local and regional scale to achieve them.

Framework updates

The measures identified in the Framework are comprehensive, and we do not expect them to become out of date in the short-term. However, we will build in a review process every five years to ensure that they are still supporting regional ambition to reduce air pollution in total, and inequality of exposure overall. We would also want to make sure that the Framework is taking account of innovations in technology, as well as national policy. Annual progress reports on the Framework delivery will be brought to the WMCA Environment and Energy Board annually.



Endnotes

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- 36 The concentration response function for attributable mortality was increased from 1.06 to 1.08 per $10\mu\text{g}/\text{m}^3$. This reflects a significant relative increase in magnitude and therefore is partially responsible for the increase in the estimated mortality attributable to particulate air pollution.
- 37 This range reflects the 95% confidence interval for the concentration response function provided by COMEAP (1.06-1.09)

Appendix A - Glossary

Table A.1 – Glossary of Terms	
Term	Meaning
Air quality (dispersion) model	An air quality dispersion model is a computer-based tool to predict how pollutants emitted from various sources, such as roads and industry disperse and affect the air quality in a specific geographic area. The models require various inputs including meteorological data, traffic data and emission inventory data to predict pollutant concentrations over a set time period (usually one year). They are predictions as there is inherent uncertainty and variability, however this can be minimised by using accurate inputs and validating models against known concentrations. Predicted data can be used to estimate pollutant concentrations in the future, however they are subject to greater uncertainty.
Ambient air quality	The quality of the air in the outdoor environment
AQAP	Air Quality Action Plan - a comprehensive strategy developed and implemented by local authorities to address air quality issues and improve air quality within a specific area, typically an Air Quality Management Area. These plans are a key component of the Local Air Quality Management process and are designed to mitigate air pollution and protect public health and the environment.
AQ-LAT	A tool developed by WM-Air to estimate the future health and healthcare costs and benefits associated with changes in fine particulate matter and nitrogen dioxide concentrations in the West Midlands Combined Authority area.
AQMA / Air Quality Management Area	A designated area in the United Kingdom where air quality objectives and standards for specific air pollutants are not being met or are at risk of not being met. Local authorities declare Air Quality Management Areas to address and manage air quality issues in certain locations. The primary purpose of designating an Air Quality Management Area is to take targeted actions to improve air quality within that specific area.
ASR	Annual Status Report - a document that provides an overview of air quality in a specific area, typically at the local authority level. Local authorities are responsible for monitoring and assessing air quality within their jurisdictions, and the ASR is a key component of the Local Air Quality Management process.
Automatic air quality monitor	A device or system designed to continuously and automatically measure and record various air quality parameters in the ambient environment. Typically, these are of 'reference' or 'reference equivalent' standard and can provide the most accurate monitoring data when properly calibrated and maintained.
BCC	Birmingham City Council
BEV	Battery electric vehicle
Biomass (combustion)	Organic materials, typically of plant or biological origin, that can be burned to produce heat or energy. Biomass combustion involves the burning of these organic materials, such as wood, agricultural residues, and other bio-based fuels, to generate heat, electricity, or other forms of energy. The burning of sustainable biomass is seen by some as one net zero solution, however there are local and regional air quality issues associated with the burning of biomass due to the releases of pollutants such as particulate matter. Using log burning appliances to burn biomass within the home presents a major risk to health due to the pollutants released both indoors and outdoors.
CAS	Clean air strategy
CAZ / Clean air zone	An area where specific measures and regulations are put in place to improve air quality by reducing air pollution. The primary objective of a Clean Air Zone is to limit the impact of harmful air pollutants, particularly in areas where pollution levels exceed established legal limits. There are range of classes from A to D, where Class A enforces the least restrictions and Class D enforces the most restrictions on vehicle types. The Birmingham clean air zone is a Class D.
CCC	Coventry City Council
Constituent local authorities	WMCA member local authorities with full voting rights. This is comprised of Birmingham City Council, City of Wolverhampton Council, Coventry City Council, Dudley Metropolitan Borough Council, Sandwell Metropolitan Borough Council, Solihull Metropolitan Borough Council and Walsall Metropolitan Borough Council.
CWC	City of Wolverhampton Council
DEFRA	Department of Environment, Food and Rural Affairs
DLUHC	Department for Levelling Up, Housing and Communities
DMBC	Dudley Metropolitan Borough Council
Domestic combustion	Primarily the burning of solid fuels in homes for heating and cooking purposes. It typically involves the use of open fires, wood-burning stoves, coal fires, and other forms of solid fuel heating and cooking appliances within residential properties. The combustion of solid fuels in households can be a significant source of air pollution, particularly in areas with a high prevalence of such practices. It also includes the use of gas appliances for cooking and heating.
EHO / EPO	Environmental health officer / environmental protection officer
EU	European Union
EV	Electric vehicle
FDG	Framework Delivery Group
FIP / Framework Implementation Plan	The document containing the priority work packages and measures for implementation between 2023 and 2025 and is based on this Framework Document and inputs from consultees.
Fraction of mortality attributable to particulate air pollution	A metric used to estimate the proportion of premature deaths within a population that can be attributed to exposure to particulate air pollution.
Greener Together Citizens' Panel	A group of 30 citizens of the West Midlands who are participating in a Panel to deliberate on some of the climate and environmental issues facing the West Midlands. More information on the Panel, and the selection process, can be found here: Greener Together Citizens Panel (wmca.org.uk) .

Table A.1 – Glossary of Terms	
Term	Meaning
Guiding principles	A set of considerations proposed by the WMCA Greener Together Citizens' Panel that should be used as part of the detailed assessment and implementation of Framework options, work packages and measures.
HGV / HDV	Heavy goods vehicles / heavy duty vehicles
ICE	Internal combustion engine
Indoor air quality	The condition of the air within indoor spaces, such as homes, offices, schools, and other enclosed environments. It encompasses the presence and concentration of various pollutants and contaminants in the indoor air and their potential impact on the health, comfort, and well-being of occupants. Maintaining good indoor air quality is essential for creating a healthy and comfortable indoor environment.
LA	Local authority
LAQM / Local Air Quality Management -	A framework established under the Environment Act 1995 to assess and manage air quality at the local level. It is designed to monitor and improve air quality in areas where pollution levels may be a concern.
LDV	Light duty vehicles
LEZ	Low emission zone
Low-cost sensor	A relatively affordable device designed to measure and monitor various air pollutants in the surrounding environment. These sensors are intended for widespread deployment, enabling individuals, communities, and organizations to access real-time or near-real-time data on air quality. While they may not provide the same level of accuracy as certified monitoring equipment, they serve as valuable tools for raising awareness about local air quality issues and for promoting citizen engagement in environmental monitoring efforts.
LTP	Local transport plan
MCDA	Multi-criteria decision analysis - a structured decision-making approach that helps individuals or organizations evaluate and prioritize various options or alternatives when faced with complex decisions involving multiple, often conflicting, criteria or objectives. Multi-criteria decision analysis provides a systematic framework for assessing, comparing, and ranking these alternatives to make informed choices.
MCERTS / iMCERTS	MCERTS is the Environment Agency's Monitoring Certification Scheme for equipment, personnel, and organisations. iMCERTS is sometimes used to indicate equipment that conforms to the performance standard for indicative ambient particulate monitors.
Measure	A Framework option that has been selected for implementation.
NAEI / National Atmospheric Emissions Inventory	Estimates of the annual pollutant emissions within the UK based on a range of data sources.
NH ₃ / Ammonia	A gas emitted from primarily agriculture that can play a major role in secondary particulate matter formation and have an impact on ecological receptors.
NO ₂ / Nitrogen dioxide	A gaseous component of air pollution and is often produced by the combustion of fossil fuels, such as in car engines and power plants.
Non-constituent local authorities	WMCA member local authorities with reduced voting rights. This is comprised of Cannock Chase District Council, North Warwickshire Borough Council, Nuneaton and Bedworth Borough Council, Redditch Borough Council, Rugby Borough Council, Shropshire Council, Stratford-on-Avon District Council, Tamworth Borough Council, Telford and Wrekin Council and Warwickshire County Council. It also includes Warwick District Council as an observer with no voting rights.
NO _x / Nitrogen oxides	A collective term used to refer to a group of reactive nitrogen oxide, primarily nitric oxide (NO) and nitrogen dioxide (NO ₂).
NPPF / National Planning Policy Framework	A planning policy document used in England to guide the planning and development process. The National Planning Policy Framework sets out the government's planning policies for local authorities and decision-makers, providing a framework for making planning decisions and shaping land use and development across England.
NZ / Net Zero	Refers to the balance between the amount of greenhouse gases emitted into the atmosphere and the amount removed from the atmosphere. Achieving net zero means that the total emissions of greenhouse gases are equal to the total removal of these gases from the atmosphere, effectively resulting in no additional increase in the concentration of greenhouse gases. This balance is crucial in the fight against climate change, as it aims to limit global warming to well below 2 degrees Celsius above pre-industrial levels, in line with the goals of the Paris Agreement.
Option	A proposed action within the Framework that can be selected for use as a standalone or combined into a work package for implementation.
PM / Particulate matter	A complex mixture of tiny solid particles and liquid droplets suspended in the air. These particles vary in size, composition, and origin and can have significant effects on air quality, human health, and the environment.
PM ₁₀	Particulate matter with an aerodynamic diameter of less than 10 micrometres.
PM _{2.5}	Particulate matter with an aerodynamic diameter of less than 2.5 micrometres. Also known as fine particulate matter.
Primary pollutants	Pollutants that are emitted directly into the atmosphere because of human activities or natural processes. These pollutants are released in their original form and are not the result of chemical reactions in the atmosphere. An example of a primary pollutant are gases such as NO ₂ produced during combustion.
RAG / Red-amber-green	A traffic light rating system used to indicate the status of a variable using red, amber or green.
SaMBC	Sandwell Metropolitan Borough Council
SCA / Smoke control area	A designated area where you cannot release smoke from a chimney; and you can only burn authorised fuel, unless you use an appliance approved by Defra. There are also penalties that can be applied if your chimney releases smoke in a smoke control area or if you buy unauthorised fuel to use in an appliance that's not approved by Defra.

Table A.1 – Glossary of Terms	
Term	Meaning
Secondary pollutants	Pollutants that are not emitted directly into the atmosphere but are formed in the atmosphere through chemical reactions involving primary pollutants, atmospheric constituents (like sunlight, water vapor, and oxygen), and sometimes natural sources. An example of this is secondary particulate matter that is formed from ammonia due to reactions in the air.
SoMBC	Solihull Metropolitan Borough Council
TfWM / Transport for West Midlands	The public body responsible for co-ordinating transport services within the WMCA area.
UK	United Kingdom
VOC	Volatile Organic Compounds
WC	Walsall Council
WHO / World Health Organisation	A specialised agency of the United Nations responsible for international public health.
WM-Air	The West Midlands Air Quality Improvement Programme – WM-Air is a NERC funded initiative, led by the University of Birmingham.
WMCA / West Midlands Combined Authority	West Midlands Combined Authority a regional governing body and partnership in the United Kingdom, established to promote economic growth, infrastructure development, and improved public services in the West Midlands region. It was created as part of the government's devolution agenda to empower regions and cities in England with greater decision-making powers and control over local issues. It was established by statutory instrument under the Local Democracy, Economic Development and Construction Act 2009.
Work package	A group of measures brought together to form a larger package of work.
µm / Micrometre	One thousandth of a millimetre

Appendix B - Key Pollutant Information, FAQs and Constituent Local Authority Summary

Table B.1 – Key Pollutants and Air Quality Information					
Pollutant	Key information	Sources and formation	Short-term impacts	Long-term impacts	Links with other pollutants
Nitrogen Dioxide – NO ₂	A gas which is a by-product of combustion.	Burning of fuel (cars, HGVs, buses, power plants). Formed from reaction between nitrogen oxides (NO _x) and other chemicals in the air.	Short-term exposure can lead to irritation of airways, respiratory symptoms such as coughing and difficulty breathing, particularly for people that have asthma.	Long-term exposure to high levels of NO ₂ can lead to development of asthma and other respiratory diseases, reduced lung function and reduced lung development in children.	Ozone precursor through photolysis
Particulate Matter – PM ₁₀	Particles less than 10µm in aerodynamic diameter.	Combustion (industry and domestic), road transport. Can be directly emitted or formed in the atmosphere (secondary).	Short-term exposure can lead to irritation of the eyes, nose and airways, respiratory symptoms such as coughing and difficulty breathing, particularly for people that have asthma.	Long-term exposure to high levels of PM ₁₀ is linked to respiratory and cardiovascular morbidity, increase of mortality from cardiovascular and respiratory diseases, and lung cancer.	Ammonia/secondary aerosol formation
Particulate Matter – PM _{2.5}	Particles less than 2.5µm in aerodynamic diameter.	Combustion (industry and domestic), road transport. Can be directly emitted or formed in the atmosphere (secondary).	Short-term exposure can lead to irritation of the eyes, nose and airways, respiratory symptoms such as coughing and difficulty breathing, particularly for people that have asthma.	Long-term exposure to high levels of PM _{2.5} is linked to respiratory and cardiovascular morbidity, increase of mortality from cardiovascular and respiratory diseases, and lung cancer.	Ammonia/secondary aerosol formation
Ozone – O ₃	A gas formed in the atmosphere.	Secondary pollutant, created by chemical reactions between other pollutants. Formed through chemical reactions between nitrogen oxides and VOCs in presence of heat and sunlight.	Short-term exposure can cause respiratory symptoms such as coughing, throat irritation, wheezing, shortness of breath and discomfort when taking deep breaths.	Long-term exposure to ozone can cause worsening of asthma and can cause asthma development.	NO _x /NO ₂
Volatile organic compounds – VOCs	Gases emitted from natural and human sources.	Vegetation, paints, aerosol sprays, disinfectants, air fresheners, engines. Emitted from natural sources (vegetation) or human made.	Dependent on the VOC, but impacts include irritation to eyes, skin and respiratory tract, headaches and dizziness.	Dependent on the VOC, but long-term effects can include neurological effects (changes in hearing, balance), liver and kidney damage.	Ozone precursor, PM reactions
Ammonia – NH ₃	A gas emitted from primarily agriculture, so a pollutant that is more prevalent in rural areas.	Agriculture (spreading of manure, slurries and fertilisers), waste and to a lesser extent road transport. Can also be released from other sources such as industrial processes and biomass	Primarily a concern for ecological impacts, however higher levels of ammonia may cause irritation to the eyes, nose and throat.	High levels of ammonia may cause burns and swelling in the airways, lung damage and can be fatal.	PM/secondary aerosol formation
Sulphur Dioxide – SO ₂	A colourless gas with a strong odour.	Power generation, industry and domestic heating. Formed through burning of fuel (or material) containing sulphur	Short term exposure to SO ₂ can cause respiratory problems and difficulty breathing, particularly for people with asthma.	Long-term breathing problems can be cause by long term inhalation exposure to SO ₂ .	

Q: What is outdoor air quality and how does it affect health?

Outdoor (or ambient) air quality is the measure of the condition of the air outdoors and is determined by the presence of various pollutants. The key pollutants within the West Midlands are particulate matter (PM₁₀ and PM_{2.5}), nitrogen dioxide (NO₂) and ozone (O₃). These pollutants can originate from both natural and human-made sources, including industrial emissions, household emissions, vehicle exhausts, construction activities and agricultural practices. Some of the ways that outdoor air quality can affect humans include:

- **Respiratory Issues:** Air pollution can cause or worsen respiratory conditions, such as asthma, bronchitis, and chronic obstructive pulmonary disease (COPD). The pollutants irritate the respiratory system, leading to symptoms like coughing, wheezing, shortness of breath, and increased susceptibility to respiratory infections.
- **Cardiovascular Problems:** Long-term exposure to air pollution has been linked to an increased risk of cardiovascular diseases, including heart attacks, strokes, and hypertension. The pollutants can enter the bloodstream, causing inflammation, oxidative stress, and damage to blood vessels.
- **Impaired Lung Development:** Children exposed to air pollution may experience impaired lung development, which can have long-lasting effects on their respiratory health and lung function throughout their lives.
- **Increased Mortality:** Long-term exposure to high levels of air pollution has been associated with increased mortality rates, particularly due to respiratory and cardiovascular diseases. The pollutants can contribute to the development of chronic illnesses and exacerbate existing health conditions. There is increasing evidence that long-term exposure to pollution can lead to certain types of cancer.
- **Reduced Quality of Life:** Poor air quality can lead to a decrease in overall well-being and quality of life.

It should be noted that the severity of health effects depends on several factors, including the concentration and duration of exposure, individual susceptibility, and the specific pollutants present in the air. Vulnerable populations, such as the elderly, children, pregnant women, and individuals with pre-existing health conditions, are generally more susceptible to the adverse effects of air pollution.

Q: What is indoor air quality and how does it affect health?

Indoor air quality is the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. Poor indoor air quality can have serious impacts on human health and well-being. Some of the ways that indoor air quality can affect humans include:

- **Respiratory problems:** Exposure to airborne pollutants, such as mould, combustion particulates, dust mites, and volatile organic compounds, can cause or worsen respiratory issues such as asthma, bronchitis, and allergies.
- **Cardiovascular problems:** Exposure to certain indoor air pollutants, such as fine particulate matter, carbon monoxide, and nitrogen oxides, can increase the risk of heart disease, stroke, and other cardiovascular problems.
- **Cognitive and neurological problems:** Certain indoor air pollutants, such as lead and carbon monoxide, can affect cognitive function and cause neurological problems.
- **Cancer:** Long-term exposure to certain indoor air pollutants, such as radon and formaldehyde, can increase the risk of cancer.
- **Eye and skin irritation:** Exposure to certain indoor air pollutants, such as pet dander and cleaning chemicals, can cause eye and skin irritation.

It is important to maintain good indoor air quality to protect human health and well-being. This can be achieved through regular ventilation, using air filters, reducing indoor pollution sources, and using non-toxic cleaning and building materials.

Q: What are the economic benefits of improving outdoor air quality?

Improving ambient air quality can bring a range of economic benefits, including:

- **Increased productivity:** Improved air quality can lead to better health and increased productivity among workers, reducing absenteeism and increasing economic output.
- **Improved public health:** Reducing exposure to air pollution can lower the cost of healthcare, as fewer people will require medical treatment for conditions caused or exacerbated by air pollution.
- **Attraction of investment:** Good air quality can make a region more attractive to investment and tourism, boosting local economies.
- **Reduced energy costs:** Improved air quality can lead to reduced energy consumption and lower energy costs, as energy-efficient systems and technologies are adopted.
- **Job creation:** Where emissions reductions don't result in the required improvements, this can include the installation of emissions control systems or retrofitting buildings, can create new jobs in industries such as construction and manufacturing.
- **Increased property values:** Improved air quality can increase property values in a region, as people are willing to pay more for cleaner and healthier living environments.
- **Protection of natural resources:** Improving air quality can help to protect natural resources, such as water and land, by reducing the levels of pollutants that can harm ecosystems and wildlife.

Table B.2 – A Summary of the Air Quality, Management and Controls Within Each Local Authority				
Local Authority	Air Quality Management Areas /Other Controls	Fraction of Mortality Attributable to Particulate Air Pollution	Public Air Quality Document Status (ASR, AQAP and CAS) and Summary of Local Air Quality	Key AQAP Measures Relevant to the Framework
Birmingham City Council (BCC)	<p>One AQMA: Birmingham AQMA, covering the whole of BCC's administrative area. Declared in 2005 for exceedances of the NO₂ annual mean objective.</p> <p>One CAZ: Class 'D' CAZ (i.e. all non-compliant vehicles are charged)</p> <p>Expected compliance with the objective is now anticipated by 2023/24 (previously 2022)</p> <p>Smoke control area: One covering the entire BCC area</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.5% (0.1% higher than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 6.2% (0.8% higher than the West Midlands and England's average of 5.5%)</p> <p>2020 - 6.3% (0.9% higher than the West Midlands average of 5.4% and 0.7% higher than England's average of 5.6%)</p> <p>2019 - 8.0% (0.7% higher than the West Midlands average of 7.3% and 0.9% higher than England's average of 7.1%).</p>	<p>Most recent publicly available ASR was published in 2023 covering 2022. The current AQAP was published in 2021 and covers up to 2026, with a new CAS published in 2022.</p> <p>There are historical widespread exceedances of the NO₂ long-term objective. The trends are relatively consistent across many locations, however there were signs of pre-COVID-19 decreases in concentrations in both 2018 and 2019.</p> <p>In 2019, the NO₂ annual mean objective was exceeded at continuous monitoring sites BCA2 (St. Chads Queensway) and BCA3 (Lower Severn Street) with an annual mean of 51.0µg/m³ and 43.0µg/m³ respectively. In 2021 and 2022, the only automatic location exceeding was BCA2, where the annual means were 40.3µg/m³ and 43.2µg/m³ respectively. This may be a reflection of increased traffic flows post COVID-19 and differences in meteorological conditions.</p> <p>Concentrations at all other continuous monitoring sites are less than 40µg/m³. The NO₂ annual mean objective was also exceeded at many of the non-automatic monitoring sites pre-COVID-19, notably within the city centre and around the A4540 ring road. In 2022, of the 156 sites 13 locations exceeded the annual mean objective. All the exceeding sites were located in the city centre or on the ring road and were therefore within the AQMA and in the vicinity of the CAZ.</p> <p>The annual mean for PM₁₀ has been consistently below the objective at the three automatic monitoring locations between 2015 and 2022 and neither were there any occasions where the daily mean limit was exceeded.</p> <p>Concentrations of PM_{2.5} continue to be low, with the highest annual mean in 2022 occurring at BAU2 (9.0µg/m³). However, it should be noted that automatic monitoring to a reference/reference equivalent standard only occurs at three locations so it may not be indicative of particular hot spots.</p>	<p>Several key measures are likely to be addressable within the framework, with Action 1 relating to CAZ implementation and Action 2 relating to the support and implementation of strategic transport improvements (likely to be mostly outside of the framework and within TfWM and BCC's remit). The measures which are likely to be addressable in some capacity within the framework are:</p> <ul style="list-style-type: none"> ● Action 3: Promote Behaviour Change away from Single Occupancy Private Vehicle Use ● Action 4: Promote the use of Alternatively Fuelled Vehicles ● Action 5: When locations are identified as having an exceedance of the air quality objectives, assess traffic management options relevant to the location ● Action 6: Develop Policies to Support Better Air Quality ● Action 7: Control Industrial and Domestic Emissions
Coventry City Council (CCC)	<p>One AQMA:</p> <p>Coventry AQMA, covering the whole of CCC's administrative area. Declared in 2009 for exceedances of the NO₂ annual mean objective.</p> <p>Smoke control area: One covering most of CCC's administrative area</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.1% (0.3% lower than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 5.7% (0.2% higher than the West Midlands and England's average of 5.5%)</p> <p>2020 - 5.8% (0.4% higher than the West Midlands average of 5.4% and 0.2% higher than England's average of 5.6%)</p> <p>2019 - 7.8% (0.5% higher than the West Midlands Average of 7.3% and 0.7% higher than England's average of 7.1%).</p>	<p>Most recent publicly available ASR was published in 2023, covering 2022. The most recent AQAP was published in 2007. A full business case for a new air quality plan was undertaken in 2021, with a view to replacing the AQAP.</p> <p>Coventry no longer undertakes automatic (continuous) monitoring that is of a reference or reference equivalent standard.</p> <p>There are historical widespread exceedances of the NO₂ long-term objective, with exceedances still being observed annually. Across most locations, there is a long-term downward trend in concentrations, however between 2017 and 2019, there are not the same level of decreases as seen prior to that. In 2020, there was a significant decrease compared to preceding years as a result of significantly less vehicles being driven during the pandemic and national lockdowns. 2021 and 2022 concentrations increased post the national lockdowns as expected.</p> <p>In 2022, the NO₂ annual mean objective was exceeded at two of 73 monitoring locations within Coventry. These are HR1cC(53.5µg/m³) and HR6 (40.9µg/m³). HR1C is located close to the kerb and tube HR6 is in close proximity on a residential façade of a small stretch of the busy Holyhead Road which is on an incline and with a street canyon.</p>	<p>Several key measures are likely to be addressable within the framework, with the following being present within the 2007 AQAP:</p> <ul style="list-style-type: none"> ● Action 4.1 Enforcement of idling vehicles legislation ● Action 8.4 Emissions from domestic sources ● Action 8.5 Control of Bonfires ● Action 8.7 Public Information ● Action 8.8 Public Awareness ● Action 8.9 Sustainable Education Development ● Within the 2020 ASR, there are a number of existing measures which can be complimented/expanded within the CA area: ● Measure 6: Coventry Local Plan and Coventry City Centre Area Action Plan ● Measure 8: Air Quality Supplementary Planning Document

Table B.2 – A Summary of the Air Quality, Management and Controls Within Each Local Authority				
Local Authority	Air Quality Management Areas /Other Controls	Fraction of Mortality Attributable to Particulate Air Pollution	Public Air Quality Document Status (ASR, AQAP and CAS) and Summary of Local Air Quality	Key AQAP Measures Relevant to the Framework
Dudley Metropolitan Borough Council (DMBC)	<p>One AQMA: The Dudley Borough AQMA, includes the whole area covered by the Dudley Borough Boundary. Declared in 2007 for exceedances of the NO₂ annual mean objective.</p> <p>Smoke control area: One, as the whole borough is designated as a smoke control area.</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.2% (0.2% lower than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 5.7% (0.2% higher than the West Midlands and England’s average of 5.5%)</p> <p>2020 - 5.8% (0.4% higher than the West Midlands average of 5.4% and 0.2% higher than England’s average of 5.6%)</p> <p>2019 - 7.5% (0.2% higher than the West Midlands Average of 7.3% and 0.4% higher than England’s average of 7.1%).</p>	<p>Most recent publicly available ASR was published in 2019, covering 2018. The current AQAP was published in 2011.</p> <p>Long-term diffusion tube and automatic monitoring within the borough indicate a general decrease in measured NO₂ concentrations compared to previous years.</p> <p>In 2018, 9 diffusion tube monitoring sites exceeded the NO₂ annual mean objective of 40µg/m³. One located on Halesowen Road recorded a concentration of 68.77µg/m³, which indicates that an exceedance of the 1-hour mean objective is likely. Only 1 automatic monitoring station (Wordsley site) showed an exceedance of the national air quality NO₂ annual mean objectives.</p> <p>PM₁₀ monitoring at the two automatic sites shows no exceedances of the annual mean concentration of 40µg/m³. Between 2008 and 2018 the annual average PM₁₀ concentrations measured at the automatic air quality stations fluctuate from year to year, however, there is a noticeable overall downward trend, at Colley Gate. Dudley Central is showing a minor increase last year and this year. The results remain well below the air quality annual objective of 40µg/m³.</p> <p>Dudley replaced the TEOM with a new monitor at the Colley Gate automatic monitoring site late in 2016, which enabled both PM₁₀ and PM_{2.5} to be monitored.</p> <p>The 2018 annual mean PM_{2.5} concentration at Colley Gate for 2018 is 11ug/m³ far below the current limit of 20ug/m³ but above 2040 targets.</p>	<p>Several key measures are likely to be addressable within the framework, with the following being present within the 2011 AQAP:</p> <ul style="list-style-type: none"> ● Action AP3: Reducing Vehicle Emissions ● Action AP4: Land Use Planning Initiatives ● Action AP5: Industrial, Commercial and Domestic Actions ● Action AP6: Promoting Awareness of Air Quality Issues ● Action AP7: Encouraging Changes In Travel Behaviour
Sandwell Metropolitan Borough Council (SaMBC)	<p>One AQMA:</p> <p>Sandwell AQMA, covering the whole of SMBC’s administrative area. Declared in 2005 for exceedances of the NO₂ annual mean objective.</p> <p>Smoke control area: Previously one smoke control area that covers less than 50% of SMBC’s administrative area. However, a borough-wide smoke control area order has been issued, which will come into force in early 2024.</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.8% (0.4% higher than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 6.5% (1% higher than the West Midlands and England’s average of 5.5%)</p> <p>2020 - 6.4% (1% higher than the West Midlands average of 5.4% and 0.8% higher than England’s average of 5.6%).</p> <p>2019 - 8.3% (1% higher than the West Midlands Average of 7.3% and 1.2% higher than England’s average of 7.1%).</p>	<p>The most recent publicly available ASR was published in 2023, covering 2022. The current AQAP was published in 2020 and covers up to 2025.</p> <p>2020 was the first year since the Sandwell AQMA was declared in 2005, that Sandwell did not record any exceedances of any of the national objective levels for any monitored pollutants. The NO₂ concentrations observed in 2022 were similar to those in 2021, and in both years there was one exceedance. In 2022 the exceedance was at location B. The COVID-19 pandemic and national lockdowns over the last two years have had an impact on traffic trends and behaviour and as such, the results from 2020 and 2021 are likely to become outliers in future data analysis and should not be relied on in predicting long-term trends.</p> <ul style="list-style-type: none"> ● NO₂ concentrations were on a downward trajectory before 2020, a reduction that was accelerated by less vehicle usage during the pandemic. In 2021 and 2022, there were slight increases in NO₂, but this has still not taken national averages back to those seen in 2019. Sandwell has generally mirrored the national trend in NO₂ over the last 5 years but at a slightly higher concentration. ● PM₁₀ concentrations at all sites demonstrated a general overall downward trend since 2007, however 2020 and 2021 (and to a lesser extent 2022) may be skewing the trend analysis. All monitored concentrations are well below the 40ug/m³ objective, with a 2022 concentration at Birmingham Road (Oldbury) of 15.0ug/m³. ● The long-term PM_{2.5} concentrations at Haden Hill were on a downward trend between 2007 and 2016, however concentrations plateaued before increasing to 8.0ug/m³ in 2022, after 4 years of plateauing closely to 7.0ug/m³. Since 2021, there have been three additional automatic stations recording PM_{2.5} at Birmingham Road, Highfields and Wilderness Lane, with 2022 concentrations of 8 ug/m³, 9ug/m³ and 7ug/m³ respectively. 	<p>Several AQAP key measures are likely to be complemented within the framework. The measures which are likely to be addressable in some capacity within the framework are:</p> <ul style="list-style-type: none"> ● Action 16: Improving access to information regarding transport options. ● Action 20: Provide air quality information and promote sustainable transport in schools ● Action 21: Publish Air Quality information website

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Local Authority	Air Quality Management Areas /Other Controls	Fraction of Mortality Attributable to Particulate Air Pollution	Public Air Quality Document Status (ASR, AQAP and CAS) and Summary of Local Air Quality	Key AQAP Measures Relevant to the Framework
Solihull Metropolitan Borough Council (SoMBC)	<p>AQMAs: There are no AQMAs in Solihull as of 2021. Monitoring will continue throughout the borough.</p> <p>Smoke control area: a discontinuous area across the borough, covering most of the border with Birmingham and other smaller targeted areas.</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 7.9% (0.5% lower than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 5.7% (0.2% higher than the West Midlands and England’s average of 5.5%)</p> <p>2020 – 5.7% (0.3% higher than the West Midlands average of 5.4% and 0.1% higher than England’s average of 5.6%).</p> <p>2019 - 7.6% (0.3% higher than the West Midlands Average of 7.3% and 0.5% higher than England’s average of 7.1%).</p>	<p>The most recent publicly available ASR was published in 2022 covering 2021. There is no requirement for Solihull to produce an AQAP.</p> <p>During 2021 there were no exceedances of the annual mean NO₂ objective. There was a slight increase in 2021 results in comparison to 2020, which would have been affected by Covid lockdowns and reduced traffic. SoMBC began deploying diffusion tubes in 2018 and therefore historical data is limited to 3 years for trend analysis (and for many sites only 1 or 2 years are available for comparison). However, in 2019 there were three locations above the annual mean objective, so it is possible that there may still be exceedances within Solihull.</p> <p>PM_{2.5} and PM₁₀ have been monitored in Solihull, however the equipment used was not suitable for providing data for LAQM purposes and has therefore been excluded from the ASR.</p>	<p>Several key measures are likely to be addressable within the framework, with the following being present within the 2019-2024 CAS:</p> <ul style="list-style-type: none"> ● Theme 1 – Education ● Theme 2 – Transport ● Theme 3 – Planning ● Theme 4 – Environment ● Theme 5 – Public Messaging ● Theme 6 – Procurement
Walsall Council (WC)	<p>Two AQMAs: Walsall AQMA, covering the whole of WC’s administrative area. Declared in 2006 for exceedances of the NO₂ annual mean and hourly objective.</p> <p>Chuckery AQMA, Declared in 2006 for exceedances of the PM₁₀ daily mean objective.</p> <p>Smoke control area: One, which covers most of WC’s administrative area.</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.5% (0.1% higher than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 6.1% (0.6% higher than the West Midlands and England’s average of 5.5%)</p> <p>2020 – 6.1% (0.7% higher than the West Midlands average of 5.4% and 0.5% higher than England’s average of 5.6%).</p> <p>2019 – 8.2% (0.9% higher than the West Midlands Average of 7.3% and 1.1% higher than England’s average of 7.1%).</p>	<p>Walsall has not published a recent ASR and its most recent AQAP is from 2009 (N.B a 2023 ASR is being prepared at the time of publication). As such, the focus on formal actions was on NO₂, however since then, Walsall has targeted particulate emissions in other ways outside of the formal local air quality management process (through detailed modelling and planning guidance). A new ASR is in production and a new AQAP is likely to be provided once new air quality limits/objectives are set.</p>	<p>Several AQAP key measures are likely to be complemented within the framework. The measures which are likely to be addressable in some capacity within the framework are:</p> <ul style="list-style-type: none"> ● Action Group 1: Reducing vehicle emissions (Page 25) ● Action Group 7: Promotion of Alternative Modes of Transport (Page 27)

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City of Wolverhampton Council (CWC)	<p>One AQMA:</p> <p>Wolverhampton Air Quality Management Area 2005, covering the whole city. Declared in 2005 for exceedances of the NO₂ annual mean and daily PM₁₀ objectives.</p> <p>Smoke control area: One, which covers most of than 50% of CWC's administrative area.</p>	<p><u>WM-Air 2021 Modelled Fraction</u></p> <p>2021 – 8.3% (0.1% lower than the WMCA average of 8.4%).</p> <p><u>PHOF Fractions</u></p> <p>2021 – 5.7% (0.2% higher than the West Midlands and England's average of 5.5%)</p> <p>2020 – 5.6% (0.2% higher than the West Midlands average of 5.4% and the same as England's average).</p> <p>2019 – 7.6% (0.3% higher than the West Midlands Average of 7.3% and 0.5% higher than England's average of 7.1%).</p>	<p>The most recent publicly available ASR was published in 2023, covering 2022. The current AQAP was published in 2006.</p> <p>The main air quality issues (relative to the objectives) in Wolverhampton relate to emissions of nitrogen dioxide (NO₂) from road traffic. The areas most affected are close to busy roads, junctions and parts of the city centre, particularly where the traffic is congested, the roads are narrow, or there is a high proportion of heavy goods vehicles (HGV's). Trend data over the last 15 years shows that levels of NO₂ are reducing. This has led to a significant drop in the number of locations where the annual mean air quality objective for NO₂ of 40µg/m₃ is being exceeded, however, there are still hot spot areas remaining. In 2022 the monitoring data identified exceedances of the objective at two sites, with the highest annual mean concentration of 41.417µg/m³ recorded at site BRO.</p> <p>For PM₁₀, the maximum annual mean concentration in 2022 was 17µg/m³ at the Penn Road monitoring site which is 58% below the objective and there have been no exceedances in recent years.</p> <p>Wolverhampton does not have any reference/reference equivalent monitors for PM_{2.5}, as such there is no data available that is suitable for LAQM purposes. The low-cost sensors that have been used are not certified to any standard such as iMCERTS.</p>	<p>Several AQAP key measures are likely to be complemented within the framework. The measures which are likely to be addressable in some capacity within the framework are:</p> <ul style="list-style-type: none"> ● Action 15 West Midlands Low Emissions Towns & Cities Program (LETCP) ● Action 19 West Midlands Transport Emissions Framework ● Action 20 West Midlands Combined Authority Regional Air Quality Review and Action Plan ● Action 22 Local sustainable transport initiatives ● Action 25 Active travel strategy

Appendix C - Framework Contributors, Partners and Consultees

Table C.1 - Core Contributors, Partners and Consultees					
Organisation	WMCA	TfWM	WM-Air at the University of Birmingham	Constituent Local Authorities (Air Quality)	WSP
Members	Alex Jones (WMCA Air Quality Framework Lead/ WSP), Jackie Homan (Head of Environment) and Mike Webb (Natural Capital Programme Manager)	Jake Thrush (Associate Policy Adviser)	William Bloss (WM- Air Lead), Joe Acton (WM-Air Impact Fellow) and Catherine Muller (Project Manager)	<p>Birmingham: Mark Wolstencroft (Operations Manager Environmental Protection), Paul Burns (Environmental Protection Officer) and Peter Mackintosh (Air Quality Projects Officer)</p> <p>Coventry: Neil Chaplin (Principal Environmental Protection Officer) and Steve Dewar (Environmental Health Officer)</p> <p>Dudley: Ruth Burgin (Pollution Control Officer) and Ian Grove (Principal Environmental Health Officer)</p> <p>Sandwell: Elizabeth Stephens (Senior Environmental Health Officer) and Sophie Morris (Public Health Specialist- Air Quality and Climate Change)</p> <p>Solihull: Nick Laws (Senior Public Health Specialist) and Amanda Clover (Senior Development Officer)</p> <p>Walsall: John Grant (Environmental Protection Manager) and Curtis Dean (Environmental Protection)</p> <p>Wolverhampton: Shaun Walker (Service Lead – Environmental Crime)</p>	<p>Air Quality: Bethan Tuckett-Jones (Head of Profession for Air Quality), Joanna Rochfort (Air Quality Team Lead), Peter Walsh (Technical Director), Andy Talbot (Associate Director), Sioni Hole (Principal Consultant) and Lee Shelton (Principal Consultant) Behaviour Change: James Knoll-Pollard (Behavioural Design Lead)</p> <p>Planning: Michael Wood (Technical Director)</p> <p>Ecology: Joe Franklin (Associate Director), and Vaughn Lewis (Consultant)</p>
Framework working group	✓	✓	✓	✓	
Option Pre-Screen	✓				
Optioneering and Advisory	✓	✓	✓	✓	✓
RAG	✓	✓			
MCDA	✓	✓	✓	✓ (Represented by Sophie Morris)	✓ (Represented by Andy Talbot)
Option Preferences	✓				

Table C.2 - Additional Contributors and Consultees (to date)		
Organisation	Members	Roles
WMCA	Alex Jones (<i>Air Quality Programme Lead – on secondment from WSP</i>), Katie Jepson (<i>Environment Behaviour Change Project Officer</i>), Ed Cox (<i>Executive Director - Strategy, Integration and Net Zero</i>) Richard Rees (<i>Senior Programme Manager – Environment</i>), Tatum Matharu (<i>Strategic Lead for Health Inequalities</i>)	Regional insight and leadership to prepare the Air Quality Framework and ensure its effective delivery.
WMCA Panels and Regional Groups	Transport Support Group (<i>TSG - Heads of Service of the local authority transport departments and TfWM policy officers</i>), Strategic Transport Officers Group (<i>STOG - Directors of Transport Departments and TfWM Policy, Strategy and Innovation Department Director</i>) and Transport Delivery Committee (TDC) Air Quality, Congestion and Environmental Sustainability Member Engagement Group, West Midlands Environmental Protection Group (WM-EPG)	Strategic oversight into the Air Quality Framework as it has progressed. These groups will be important consultees as the Framework, and associated projects, is delivered
TfWM	David Harris (<i>Transport Strategy and Place Manager</i>), Alex Greatholder (<i>Principal Policy and Strategy Officer</i>), Liam Edge (<i>Transport Data Researcher</i>), Claire Williams (<i>Head of Cycling and Walking</i>), Mitchell Robinson (<i>Cycling and Walking Development Officer</i>), Stuart Lester (<i>Head of Transport Data</i>), Helen Osborn (<i>Travel Behaviour Specialist</i>) and Gill Hunt (<i>Travel Behaviour Specialist</i>)	Provided route to engage with the regional transport leads and input into the Local Transport Plan. Will be a critical partner in delivering the transport-related elements of the programme.
Birmingham University/ WM-Air	Suzanne Bartington (<i>WM-Air Health Effects Strand Lead</i>), James Hall (<i>Research Fellow</i>) and Jian Zhong (<i>WM-Air Model Development</i>).	Provided access to data, mapping and detailed knowledge of air quality in the West Midlands; this expertise will continue to be important through Framework delivery.
Constituent Local Authorities - Other	<p>Birmingham: Maria Dunn (<i>Head of Development Policy</i>), Sarah Scannell (<i>Planning Assistant Director</i>), Uyen-Phan Han (<i>Planning Policy Manager</i>), Chris Baggot (<i>Public Health Service Lead</i>) and Claire Humphries (<i>Senior Public Health Officer</i>)</p> <p>Coventry: Alicia Phillips (<i>Programme Manager for Inequalities in Built Environment</i>), Emily Stewart (<i>Programme Officer for Inequalities in Built Environment</i>) and Angelia Baker (<i>Consultant in Public Health and Inequalities</i>)</p> <p>Dudley: Joanne Todd (<i>Development Manager</i>)</p> <p>Solihull: Mark Andrews (<i>Head of Planning, Design and Engagement Services</i>)</p> <p>Wolverhampton: Michelle Ross (<i>Lead Planning Manager</i>) and Perminder Balu (<i>Head of Green Cities and Circular Economy</i>)</p>	Local authorities are the main bodies accountable for air quality delivery. They also have responsibility for planning, which will be critical for reducing air pollution across the region. Each local authority has had opportunity to contribute to the Framework, and assess the measures suggested.
External Local Authorities	Coventry and Warwickshire Air Quality Alliance	Consultee
External Organisations	Asthma and Lung UK, Clean Air Justice Network, EarthSense	External organisations will be a key part of supporting and providing input from specific areas of expertise to deliver the Framework.
Greener Together Citizens' Panel	The West Midlands Combined Authority established a Greener Together Citizens' Panel to provide a representative voice to influence the delivery on key issues in the environment and energy programme.	The Panel discussed air quality as the first 'module', with a series of guiding principles that any applied measures should consider.

We acknowledge and thank the attendees of the Framework consultation workshop. The full list of attendees on the day is as follows:

- Maddy Dawe (Asthma + Lung UK)
- Maria Dunn (Birmingham City Council)
- Claire Humphries (Birmingham City Council)
- Peter Mackintosh (Birmingham City Council)
- Stephen Arnold (Birmingham City Council)
- Ian Braddock (Birmingham City Council)
- Waseem Zaffar (Clean Air Justice Network)
- Emily Stewart (Coventry City Council)
- Ruth Burgin (Dudley MBC)
- Ian Grove (Dudley MBC)
- Christopher King (Dudley MBC)
- Gordon Allison (DustScanAQ on behalf of South Coast Science)
- Chris Taylor (EarthSense Systems Limited)
- David Green (EarthSense Systems Limited)
- Greg Lewis (EarthSense Systems Limited)
- Kirsten de Vos (Mums for Lungs)
- Charlotte Harris (NHS England)
- Sophie Morris (Sandwell Council)
- Lucy Bastin (School of Computer Science, Aston University)
- Nick Laws (Solihull MBC)
- Amanda Clover (Solihull MBC)
- Tim Egan (Sustrans)
- David Clasby (Sustrans)
- Ninette Harris (The Dudley Group NHS Foundation Trust)
- David Harris (Transport for West Midlands)
- Jake Thrush (Transport for West Midlands)
- Catherine Muller (University of Birmingham)
- Joe Acton (University of Birmingham)
- William Bloss (University of Birmingham)
- Zongbo Shi (University of Birmingham)
- Sue Jowett (University of Birmingham)
- James Hall (University of Birmingham)
- Damilola Agbato (Walsall MBC)
- Pat Fleming (Walsall MBC)
- Matthew Griffin (West Midlands Combined Authority)
- Bethany Haskins-Vaheesan (West Midlands Combined Authority)
- Jordan Gerrard (West Midlands Combined Authority)
- Nathan Morrison (West Midlands Combined Authority)
- Richard Rees (West Midlands Combined Authority)
- Grace Scrivens (West Midlands Combined Authority)
- Jackie Homan (West Midlands Combined Authority)
- Katie Jepson (West Midlands Combined Authority)
- Ritvick Nagar (West Midlands Combined Authority)
- Alex Jones (West Midlands Combined Authority/WSP)
- Liz Hopkins (West Midlands Fire Service)
- Ian Greatbatch (West Midlands Fire Service)
- John Newson (West Midlands Friends of the Earth)
- Joanna Rochfort (WSP)

Appendix D – Option Appraisal

RAG	Within Framework scope and/or directly implementable by WMCA, partners or constituent local authorities	Funding and resourcing	Air quality, health and inequality	Co-benefits	Objections to inclusion
Green	The measure is within Framework scope - i.e. is actionable/implementable by one or more of: WMCA/TfWM, more than one LA or another partner within existing legislation/powers.	The measure is likely to be able to be funded through available through existing streams, other sources (CAZ/S106 etc.) and/or able to utilise existing resources with limited constraints.	There is a clear positive impact (with no disbenefits) on any of: emissions, exposure, health/health-cost benefit and inequality.	There is at least one co-benefit (with no disbenefits) regarding one or more of: the natural environment, regional economy or GHG/climate.	No objection(s) based on professional judgement, officer opinion or other justifiable reason.
Amber	The measure potentially within Framework scope - i.e. is actionable/implementable by one or more of: WMCA/TfWM, more than one LA or another partner but may need slight modification to existing legislation/powers.	Potential to be covered through existing/well known funding streams, other sources (CAZ/S106 etc.) and/or with potential long term resourcing constraints resolvable through funding etc.	There is a negligible, unknown or mixed positive/negative impacts on emissions, exposure, health/health-cost benefit and inequality.	There are no clear co-benefits, or there are mixed positive/negative impacts regarding the natural environment, regional economy or GHG/climate.	Reservations on inclusion based on professional judgement, officer opinion or other justifiable reason.
Red	The measure is likely to be outside of Framework delivery scope - i.e. is not actionable by any of: WMCA/TfWM or a partner, or it applies to just one LA. This includes measures which cannot be delivered without central government intervention or significant change in legislation/national political policy.	Would require significant external funding which has not been realised to date and/or additional resourcing constraints not being covered/resolved by the measure/funding.	There is a clear negative impact (with no positives) on any of: emissions, exposure, health/health-cost benefit and inequality.	There are clear disbenefits (with no co-benefits) regarding one or more of: the natural environment, regional economy or GHG/climate.	Objection(s) based on professional judgement, officer opinion or other justifiable reason.

Theme	Category	Framework Option Code	Measure	RAG							
				Within Framework Scope and/or Directly Implementable by WMCA or Constituent LAs	Funding and resourcing	Air quality, health and inequality	Co-benefits	Objections to inclusion?	Proceed?	Objection rationale/comment	
Engagement and Behaviour Change (EBC)	Domestic Emissions and Indoor Air Quality	EBC1	To raise awareness of specific air quality issues and potential solutions associated with the use of log burners, fireplaces and bonfires.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC2	Raise awareness of air quality issues and potential solutions associated with general domestic combustion.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC3	Where solid fuel combustion is required, raise awareness to ensure the correct fuels are used (i.e. dry seasoned wood).	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC4	Raise awareness of wider general indoor air quality issues, how to manage and potential solutions.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC5	Engage with estate, letting agents to increase market awareness of indoor air quality issues.	Green	Amber	Amber	Amber	Green	Green	PROCEED	
		EBC6	Engage with council and private housing organisations to increase awareness of indoor air quality issues and the actions that need to be taken to reduce the impacts.	Green	Green	Green	Amber	Green	Green	PROCEED	
		EBC7	Promote good practice with heating the home and drying clothing.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC8	Coordination of approaches to solid fuel combustion (domestic, industry), including guidance for retailers, wholesalers.	Amber	Amber	Amber	Green	Green	Green	PROCEED	
		EBC9	Use low-cost sensors to capture high level domestic combustion data to be used in effective behavioural change advertisement and create real life stories/ case studies.	Green	Amber	Amber	Green	Green	Green	PROCEED	
	Transport	EBC10	Leverage campaigns for public transport, walking and cycling to promote the various co-benefits (including emissions and health) along with exposure mitigation.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC11	Providing a region wide driver training module to incorporate eco-driving messaging (including idling).	Green	Amber	Green	Green	Green	Green	PROCEED	
		EBC12	Consistent anti-idling campaigns across the West Midlands.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC13	Incorporate air quality aspects into existing and future school/workplace/development travel plans to reduce emissions and exposure to pollutants.	Green	Amber	Green	Green	Green	Green	PROCEED	
		EBC14	Promote vehicle sharing.	Green	Green	Green	Green	Green	Green	PROCEED	
		EBC15	Promotion of best driving practices, including supporting on driving techniques for hybrid and electric vehicles; and ensuring correct tyre pressures and wheel alignment.	Green	Amber	Green	Green	Green	Green	PROCEED	
		EBC16	Use existing training mechanisms to inform professional drivers (both road and rail) of the relevant best practice measures and techniques to reduce emissions where possible.	Amber	Amber	Green	Green	Green	Green	PROCEED	

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		N/A	Roadside vehicle emissions tests and checks for defective Diesel Particulate Filters (DPF).	Red	Red	Green	Green	Amber	STOP	Not viable to resource and should be undertaken by the relevant authorities
		N/A	Promote biofuels in passenger vehicles.	Amber	Amber	Red	Green	Red	STOP	Potential worsening of AQ related to biofuels and no clear benefit
		EBC17	Promotion of home working and reducing commuting related trips.	Amber	Amber	Green	Amber	Green	PROCEED	
		EBC18	Use portable and fixed signage to highlight air quality issues and why actions (such as speed limit reductions) are in place.	Green	Amber	Amber	Amber	Green	PROCEED	
		N/A	Promote abatement retrofit.	Amber	Amber	Amber	Amber	Red	STOP	DEFRA advising that retrofit should be paused/stopped due to variable effectiveness.
	Natural and Built Environment	EBC19	Provide advice on how residents can utilise green spaces to improve health and reduce pollution exposure during exercise.	Green	Green	Green	Green	Green	PROCEED	
		EBC20	Provide information on how residents can use planting and green infrastructure to reduce pollutant exposure and improve health/wellbeing.	Green	Green	Green	Green	Green	PROCEED	
	Commercial, Industrial and Agriculture	EBC21	Engage and inform the public on key commercial, industrial and agricultural issues.	Green	Amber	Green	Green	Green	PROCEED	
		EBC22	Behaviour change in food consumption.	Amber	Amber	Amber	Green	Green	PROCEED	
		EBC23	Training for behavioural changes in construction management, processes and methods.	Amber	Amber	Green	Green	Green	PROCEED	
		EBC24	Promote the benefits to changes in livestock diet.	Amber	Amber	Amber	Green	Amber	PROCEED	
	Public Health	EBC25	Provide information on how to reduce personal exposure to poor air quality outside of the home and what can be benefits can be.	Green	Green	Green	Green	Green	PROCEED	
		EBC26	Develop a small public health toolkit between stakeholders which standardises air quality communications and phrases across the West Midlands to ensure that communications are consistent and effective.	Green	Green	Green	Green	Green	PROCEED	
		EBC27	Use health professionals to educate and disseminate targeted air quality information to vulnerable and at risk patients.	Green	Amber	Green	Green	Green	PROCEED	
		EBC28	Develop and deliver a consistent regional schools engagement programme across the West Midlands, with flexibility to account for variations across the area (such as city vs suburban locations).	Green	Amber	Green	Green	Green	PROCEED	

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		EBC29	Work with existing public health channels to deliver consistent messaging across the West Midlands.	Green	Green	Green	Green	Green	PROCEED	
	Planning, Policy, Governance and Mechanisms for Change	EBC30	Provide a centralised online public resource and/or platform for engagement and behaviour change co-ordination across the West Midlands.	Green	Amber	Green	Green	Green	PROCEED	
	Monitoring and digital	EBC31	Use a regional air quality website to deliver key air quality information and effective information to facilitate behavioural change through a single point for the West Midlands.	Green	Amber	Green	Green	Green	PROCEED	
		EBC32	Interactive online resources to demonstrate air quality issues.	Green	Amber	Green	Green	Green	PROCEED	
	General	EBC33	Use public engagement panels (such as the Greener Together Citizens Panel) to test communication and messaging where possible to get feedback on how campaigns will be perceived.	Green	Amber	Amber	Amber	Green	PROCEED	
		EBC34	Use trusted advisors to disseminate air quality messaging (including faith leaders, GPs, nurses, fire service etc).	Green	Amber	Green	Green	Green	PROCEED	
		EBC35	Undertake advertisement campaigns when interventions are ongoing to raise awareness and to co-promote at the time, rather than afterwards.	Green	Amber	Amber	Amber	Green	PROCEED	
		EBC36	Prominent signage in key areas/hotspots to display air quality information.	Green	Amber	Amber	Green	Green	PROCEED	
		EBC37	Investigate how air quality can be made tangible (unlike other issues such as noise) through measures such as temporary street closures (using street party regulations) so that people can see the difference when action is taken.	Green	Amber	Amber	Amber	Green	PROCEED	
		EBC38	Ensure that air quality communication and engagement are consistent and inclusive across the West Midlands (and modified where necessary) to make messaging as clear as possible with the best chance of behavioural change.	Green	Green	Green	Green	Green	PROCEED	
		EBC39	Have an open route for communication and co-ordination between comms teams at the WMCA and local authorities to be able to effectively co-ordinate and deliver air quality communications.	Green	Green	Amber	Amber	Green	PROCEED	
Domestic Emissions and Indoor Air Quality (DOM)	Supporting Actions	DOM1	Reduce Fuel Combustion by Improving home Energy Efficiency.	Green	Amber	Green	Green	Green	PROCEED	
		DOM2	Use the planning process to restrict the installation of new solid fuel appliances in the cases where planning consent is required.	Green	Green	Green	Amber	Green	PROCEED	
		DOM3	Enforce and expand restrictions on domestic use of solid fuels from existing appliances.	Amber	Amber	Amber	Green	Green	PROCEED	

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	Policy	DOM4	Supporting the transition from gas central heating.	Green	Amber	Green	Green	Green	PROCEED			
		DOM5	Undertake audits of the local authority school and housing stock to determine what measures can be implemented. Promote co-working with housing teams to improve indoor air quality outcomes.	Amber	Amber	Amber	Green	Green	PROCEED			
		DOM6	Support landlords and homeowners in accessing grants to retrofit.	Green	Amber	Green	Green	Green	PROCEED			
		DOM7	More stringent requirements within the planning process for expediting the transition from gas central heating.	Amber	Amber	Green	Green	Green	PROCEED			
		DOM8	Smoke control area expansion.	Green	Amber	Green	Green	Green	PROCEED			
			Log burner scrappage scheme.	Red	Red	Green	Green	Red	STOP	Advised this is not feasible from a planning perspective, difficult to enforce and not supported by central government. However, other mechanisms within the planning process may be possible.		
		DOM9	Revisions to garden waste collections to reduce the instances of bonfires within urban areas.	Amber	Amber	Green	Green	Amber	PROCEED			
		Transport (TRN)	Policy and interventions	TRN1	Ensure that there is the sufficient assessment/integration of transport plans and projects (such as area transport strategies and mitigation schemes) to ensure that the air quality impacts are quantified and where necessary, mitigated.	Green	Green	Green	Green	Green	PROCEED	
				TRN2	Taxi driver licencing change to enforce low emissions vehicles.	Amber	Amber	Green	Green	Green	PROCEED	
		TRN3	Additional Clean Air Zones/congestion charge zones which consider NO ₂ and other pollutants.	Amber	Red	Amber	Green	Green	PROCEED			
		TRN4	Introduction of new Low Traffic Neighbourhoods and local area environmental traffic management measures.	Green	Red	Amber	Amber	Green	PROCEED			
		TRN5	Improved anti-idling enforcement.	Amber	Red	Green	Green	Green	PROCEED			
		TRN6	Reduce parking for new developments where possible and local services are not available, ensure that transport needs are addressed and are improved in the local area.	Green	Green	Green	Green	Green	PROCEED			
		TRN7	Support and accelerate transition to zero emission bus fleet.	Amber	Amber	Green	Green	Green	PROCEED			
		N/A	Enforcement of zero emission bus fleet.	Red	Red	Green	Green	Green	STOP	No mechanism for enforcement and plans already in place for viable transition – See TRN8		

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		TRN8	Achieve a zero emission West Midlands bus fleet by 2030 and consider use which brings greatest benefit to areas with poor air quality in the deployment strategy.	Amber	Red	Green	Green	Green	Green	PROCEED	
		TRN9	Designating new & priority bus measures.	Amber	Amber	Green	Green	Green	Green	PROCEED	
		TRN10	Park and ride schemes.	Amber	Amber	Amber	Green	Amber	Green	PROCEED	
		TRN11	Explore the case for workplace parking levies and other effective demand management measures as part of area strategies for the West Midlands.	Amber	Amber	Amber	Amber	Green	Green	PROCEED	
		TRN12	Vehicle procurement best practice documentation and guidance.	Green	Amber	Green	Green	Green	Green	PROCEED	
		TRN13	Active traffic light management to smooth traffic flows and reduce idling.	Green	Amber	Green	Green	Green	Green	PROCEED	
		TRN14	West Midlands wide fleet recognition schemes to promote LEV.	Green	Red	Green	Green	Green	Green	PROCEED	
		N/A	Region wide EV charging scheme, with WMCA/ TfWM providing support and local authorities investigating releasing land to enable widespread installation and adoption.	Amber	Red	Green	Green	Red	Red	STOP	Local authorities are grouping together already, with TfWM support.
		TRN15	Speed limit reduction (or dynamic speed limits) on high-speed roads.	Amber	Amber	Green	Green	Green	Green	PROCEED	
		TRN16	Investigate the lowering and enforcement of speed limits in urban centres and residential areas to address localised transport related air pollution and increase active travel. This includes further roll-out of 20 mph speed limits.	Green	Amber	Green	Green	Green	Green	PROCEED	
		TRN17	HGV bans/restrictions in urban centres, including out of hours freight delivery.	Green	Amber	Green	Amber	Green	Green	PROCEED	
		TRN18	Zero emission final mile delivery measures.	Green	Amber	Green	Green	Green	Green	PROCEED	
		TRN19	Priority parking and/or reduced charges for low emission vehicles.	Green	Amber	Amber	Amber	Green	Green	PROCEED	
		N/A	Provision of school buses.	Amber	Amber	Amber	Green	Red	Red	STOP	Not something that could be rolled out by TfWM and not likely to be funded and supported by local authorities due to costs, logistics etc.
		TRN20	High occupancy vehicle lanes and/or greater priority for buses and other public transport.	Green	Amber	Amber	Green	Amber	Green	PROCEED	
		N/A	Lorry overtaking bans on major roads.	Red	Amber	Green	Green	Red	Red	STOP	Both outside of the Framework scope and is highly unlikely to be implemented and supported.

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		TRN21	Implement exposure reduction measures at major transport hubs.	Amber	Red	Green	Green	Green	PROCEED	
		TRN22	Implementation of new road surface compositions/ construction methods and road treatments once research reveals effective solutions.	Amber	Red	Amber	Green	Green	PROCEED	
		TRN23	Redesign bus stops and other minor waiting locations (where there will be transient exposure to high concentrations).	Green	Amber	Green	Green	Green	PROCEED	
	Tools and digital	TRN24	Create a route planning tool with modelled/real time air quality information so that people can reduce exposure when walking and/or make the decision to take public transport.	Green	Amber	Green	Green	Green	PROCEED	
	Supporting research	TRN25	Research and 'test-bed' implementation of new road surface composition and construction to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	Amber	Amber	Amber	Green	Green	PROCEED	
		TRN26	Research and 'test-bed' implementation of new tyre composition and manufacturing techniques to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	Amber	Amber	Amber	Green	Green	PROCEED	
		TRN27	Support and accelerate transition to zero emission HGV fleet, especially in urban centres.	Amber	Red	Green	Green	Green	PROCEED	
		TRN28	Research and 'test-bed' implementation of road treatments to reduce resuspension.	Amber	Amber	Amber	Green	Green	PROCEED	
Natural and Built Environment (NBE)	Policy	NBE1	Leverage modified biodiversity net gain (BNG) metrics to improve urban design and reduce exposure to poor air quality.	Green	Green	Green	Green	Green	PROCEED	
		NBE2	Promote transport schemes and road alterations that include effective green infrastructure to reduce exposure to poor air quality.	Green	Green	Green	Green	Green	PROCEED	
		NBE3	Require the consideration of the co-benefits of site Masterplanning and ecological features on reducing exposure to poor air quality.	Green	Green	Green	Green	Green	PROCEED	
		NBE4	Use damage cost contributions to effectively improve the environment and green infrastructure around new schemes.	Green	Green	Green	Green	Green	PROCEED	
		NBE5	Working through the Natural Environment Plan to identify best uses of green infrastructure for air quality.	Green	Green	Amber	Green	Green	PROCEED	
	Hard measures	NBE6	Increase tree planting of suitable species along key road routes to reduce pollutant exposure.	Green	Amber	Green	Green	Green	PROCEED	
		NBE7	Increase the use of dense urban vegetation to create barriers between sources of pollution and places of exposure.	Green	Amber	Green	Green	Green	PROCEED	

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		NBE8	Land use planning - give preference to developments in locations that minimise the need to travel and/or propose sufficient facilities, which will therefore reduce operational impacts.	Green	Green	Green	Green	Green	PROCEED		
		NBE9	Creation of Low Traffic Neighbourhoods and local area environmental traffic management as part of the design of new developments which promotes sustainable transport use.	Green	Amber	Amber	Amber	Green	PROCEED		
		NBE10	Use street furniture and natural features to reduce exposure and create barriers at key waiting locations.	Green	Amber	Green	Green	Green	PROCEED		
		NBE11	Construction of new high quality cycle tracks and other cycle infrastructure in accord with West Midlands cycle network planning, including links between key developments and key services to promote mode shift from car.	Green	Amber	Green	Green	Green	PROCEED		
	Supporting research	NBE12	Research on the effectiveness of new technologies for reducing pollutant concentrations in the built environment.	Amber	Amber	Amber	Green	Green	PROCEED		
	Commercial, Industrial and Agriculture (CIA)	General	CIA1	Create an emissions 'health check'/audit programme for commercial, industrial and agricultural businesses to engage with and determine how they can reduce their emissions and what support is available.	Amber	Amber	Green	Green	Green	PROCEED	
			N/A	Enforcement to prevent removal/defeat of emission control devices.	Red	Red	Green	Green	Red	STOP	Would be good to do, but within the Environment Agency's remit for permitted installations and would not be feasible in terms of funding or capacity from local authorities for other cases.
CIA2			Non-Domestic Buildings - Reduce fuel combustion by improving energy efficiency through grants and guidance.	Green	Red	Green	Green	Green	PROCEED		
CIA3			Non-domestic buildings – Transformation of heating away from the combustion of fuels.	Green	Red	Green	Green	Green	PROCEED		
CIA4			Increased scrutiny and consideration of health impacts relating to heat/power generation from biomass/waste/incineration.	Green	Amber	Green	Green	Green	PROCEED		
CIA5			Increase/establish co-working with the Environment Agency to enforce permits.	Green	Amber	Green	Green	Green	PROCEED		
CIA6			Undertake audits of the local authority commercial building stock to determine what measures can be implemented.	Amber	Amber	Amber	Green	Green	PROCEED		

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		CIA7	Development of more local sustainable energy generation capacity and associated battery storage.	Amber	Red	Green	Green	Green	PROCEED	
	Commercial	CIA8	Promote electric transport refrigeration units (TRUs).	Green	Amber	Green	Green	Green	PROCEED	
		CIA9	Facilitate and promote access to funding for commercial retrofit of heating and cooling systems.	Green	Amber	Green	Green	Green	PROCEED	
		CIA10	Region wide industrial off-road mobile and stationary machinery emission controls.	Green	Amber	Green	Green	Green	PROCEED	
	Industrial	CIA11	Discourage investment in biomass fuelled heat/power and potential for regulating biomass combustion plants <1MW.	Amber	Amber	Green	Amber	Green	PROCEED	
		N/A	Monitoring and improved fugitive emissions capture.	Red	Red	Green	Green	Red	STOP	Would be good to do, but within the Environment Agency's remit for permitted installations and would not be feasible in terms of funding or capacity from local authorities for other cases
		CIA12	NOx, SO2, VOC, PM abatement guidance and providing support on how this can be achieved/funded.	Amber	Amber	Green	Green	Green	PROCEED	
	Agriculture	CIA13	Provide advice on best practice regarding the use of fertilisers and what can easily be changed to reduce emissions of pollutants and secondary aerosol formation.	Amber	Amber	Green	Green	Green	PROCEED	
		CIA14	Promoting low emission spreading.	Amber	Amber	Green	Green	Green	PROCEED	
		CIA15	Advice/guidance on fuel choice and usage for farm equipment.	Green	Green	Green	Green	Green	PROCEED	
	Construction	CIA16	Consistent advice, policy and enforcement of dust abatement measures.	Green	Amber	Green	Green	Green	PROCEED	
		CIA17	Region wide NRMM emission standards (such as stage V NRMM retrofit/Provisional GB Type Approval Scheme).	Green	Green	Green	Green	Green	PROCEED	
		CIA18	Promote electric and/or hydrogen powered NRMM.	Green	Green	Green	Green	Green	PROCEED	
		N/A	Precision equipment for improving construction efficiency.	Red	Red	Amber	Amber	Green	STOP	Not within the remit the Framework or actionable by local authorities or partners
		CIA19	Promote the use of hybrid generators.	Green	Green	Green	Green	Green	PROCEED	
		CIA20	Promote off-site construction and manufacturing.	Green	Green	Green	Green	Green	PROCEED	
	Research	CIA21	Research the sources and methods for effective secondary aerosol formation reduction and how these can be implemented across commercial, industrial and agriculture.	Amber	Amber	Amber	Green	Green	PROCEED	

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Public health (PH)	Tools and information	PH1	Roll out tools to warn and update residents of poor air quality and supported by regional/local healthcare system.	Green	Amber	Green	Green	Green	PROCEED	
		PH2	Develop tools to reduce exposure to poor air quality outside of the home, such as journey planners linked to pollution modelling and real time data.	Green	Green	Green	Green	Green	PROCEED	
		PH3	Develop a toolbox of measures that local authorities can easily implement and have pre-packaged communications packages that local authorities can use to promote the measures.	Green	Green	Green	Green	Green	PROCEED	
		PH4	Introduce a West Midlands schools accreditation and education scheme for air quality.	Green	Amber	Green	Green	Green	PROCEED	
	Research	PH5	Research into the real-world exposure of West Midlands' residents (including the differences in exposure based on age and socio-economic situation) and what measures can be effectively implemented based on the findings.	Green	Amber	Amber	Green	Green	PROCEED	
Planning, Policy, Governance and mechanisms for change (PPG)	Regional planning and policy	PPG1	Establish a region wide planning and design for air quality best practice document which will be kept updated with local, regional and national changes in guidance and legislation.	Green	Amber	Green	Green	Green	PROCEED	
		PPG2	Introduce air quality neutral and/or air quality positive assessments into the planning process across the West Midlands.	Green	Green	Green	Green	Green	PROCEED	
		PPG3	Provide centralised support for local authorities in areas such as local plan policy to promote consistency and dealing with more complex air quality assessment methodologies.	Green	Amber	Amber	Green	Amber	PROCEED	
		PPG4	Use mechanisms (such as future local plans) to enforce more stringent regional air quality limits/compliance timescales.	Green	Green	Green	Green	Green	PROCEED	
		PPG5	Scope for a "Net Health Gain" principle.	Green	Green	Green	Green	Green	PROCEED	
		PPG6	Develop guidelines for best practices for procurement that will support air quality improvements (e.g. use of Non-Road Mobile Machinery).	Green	Amber	Green	Green	Green	PROCEED	
		PPG7	Integrate AQ considerations (evaluated as population health benefit) into WMCA policy where relevant.	Green	Green	Green	Green	Green	PROCEED	
		N/A	Installation emission concentration limits: Cost Benefit Analysis (CBA) based-permitting.	Red	Red	Green	Green	Red	STOP	Would be good to do, but within the Environment Agency's remit
		N/A	Air quality emission trading schemes.	Red	Red	Amber	Amber	Red	STOP	Would likely need to be nationally led, however the West Midlands could do a pilot at some point.

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		PPG8	Including Health Impact Assessments (HIA) in planning applications and containing air quality.	Green	Green	Green	Green	Green	PROCEED	
		PPG9	Promote district heat networks (using heat pumps) for large developments.	Green	Amber	Green	Green	Green	PROCEED	
		PPG10	Set minimum environmental requirements for each Local Plan site allocation, which sets out requirements well in advance of the planning stage.	Green	Green	Green	Green	Green	PROCEED	
		PPG11	Move away from the IAQM assessment criteria to both more stringent thresholds for detailed assessment and using health-based assessment for the quantification of impacts.	Amber	Green	Amber	Green	Green	PROCEED	
		PPG12	Use planning conditions/S106 for new developments to reduce the number of car trips near schools restricting access to staff during certain times.	Green	Green	Green	Green	Green	PROCEED	
		PPG13	Provide guidance on how planning will consider the air quality and climate/net zero co-benefits and disbenefits within the planning process and are addressed in a joined-up way by officers.	Green	Amber	Green	Green	Green	PROCEED	
		PPG14	Continue to roll out school streets programmes to reduce traffic and emissions in the vicinity of schools when there is transient exposure.	Green	Amber	Green	Green	Green	PROCEED	
	Governance and Mechanisms for Change	PPG15	Have a centrally managed regional air quality assembly to provide support, guidance and co-ordination for local authorities and to ensure where possible, there is consistency, open communication channels and leveraging opportunities for funding etc.	Green	Amber	Amber	Green	Green	PROCEED	
		PPG16	Coordinate regional approaches to government on policy and resources to tackle air quality challenges (DEFRA, HMT and key partners, e.g., Environment Agency, National Highways).	Green	Amber	Green	Green	Green	PROCEED	
		PPG17	Have a platform for WMCA and local authority officers to share ideas and plans for engagement to ensure that regional roll outs can happen, facilitate knowledge sharing and leverage combined procurement where applicable.	Green	Amber	Amber	Green	Green	PROCEED	
		PPG18	Provide grant and project co-ordination through the WMCA to ensure that there is consistency across the West Midlands and procurement is effective.	Green	Amber	Amber	Green	Green	PROCEED	
	Skills and training	PPG19	Provide training for members/decision makers/local authority officers through a standalone air quality literacy training programme to ensure they are up to date on air quality matters.	Green	Amber	Amber	Green	Green	PROCEED	
		PPG20	Co-ordinate regional air quality upskilling and knowledge share for air quality officers.	Green	Amber	Amber	Green	Green	PROCEED	

Theme	Category	Framework Option Code	Measure	RAG						
				Within Framework Scope and/or Directly Implementable by WMCA or Constituent LAs	Funding and resourcing	Air quality, health and inequality	Co-benefits	Objections to inclusion?	Proceed?	Objection rationale/comment
Monitoring and digital (MON)	Monitoring and Data	MON1	Establish a West Midlands wide low-cost sensor network, with an associated standalone website that includes existing regional data, enable other systems (such as an alert system) and air quality information that is effective for behaviour change.	Green	Amber	Amber	Green	Green	PROCEED	
		MON2	Establish regional standards on air quality monitoring covering all monitoring types to ensure that the data being acquired is robust and the equipment used is to a minimum standard.	Green	Amber	Amber	Green	Green	PROCEED	
		MON3	Establish a pathway for streamlined procurement of air quality monitoring equipment and resources to both leverage economies of scale and ensuring that the correct equipment is purchased based on the regional standards.	Green	Amber	Amber	Green	Green	PROCEED	
		MON4	Use a centralised West Midlands air quality network website as a data store to enable various analyses such as trends and the quantification of the impact of air quality measures.	Green	Amber	Amber	Green	Green	PROCEED	
	Research	MON5	Understand the relative importance of within-region emissions and transported air pollution for WMCA air quality.	Amber	Amber	Amber	Green	Green	PROCEED	
		MON6	Understanding real-world emissions to underpin policy, e.g. identifying largest emitters across actual WM fleet (all vehicles).	Amber	Amber	Amber	Green	Green	PROCEED	
Climate/Net Zero Considerations (CNZ)		CNZ1	Metrics for improving air quality, to capture co-benefits from net zero actions and for policy to reduce regional health inequalities.	Green	Amber	Amber	Green	Green	PROCEED	
		CNZ2	Provide guidance on how the changing climate will affect air quality (and potentially other areas) and how this can be mitigated and be a co-benefit.	Green	Amber	Amber	Green	Green	PROCEED	
		CNZ3	Air quality innovation zones to sit alongside other programmes such as net zero neighbourhoods and industrial decarbonisation programmes.	Amber	Red	Green	Green	Green	PROCEED	
		CNZ4	Understand where air quality can be integrated into communications and programmes on solar/renewables/heat pump and used to highlight benefits and general air quality awareness.	Amber	Green	Amber	Green	Green	PROCEED	
		CNZ5	Engage with large transport providers such as rail/station operators and Birmingham Airport and promote greater integration of air quality into net zero and climate plans.	Green	Amber	Green	Green	Green	PROCEED	

Table D.3 – Multiple-criteria Decision Analysis (MCDA) Matrix									
Grouping	Group Weighting	Qualitative Criteria	Score to be applied						
			-3	-2	-1	0	1	2	3
Health (H)	40%	Improvement to human health - Air quality benefit (H1)	Large negative impact on human health	Moderate negative impact on human health	Slight negative impact on human health	Neutral impact on human health	Small positive impact on human health	Moderate positive impact on human health	Large positive impact on human health
		Exposure and /or emission reduction and /or promote long term behaviour change (H2)	Large increase in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Moderate increase in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Slight increase in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Neutral impact on in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Small reduction in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Moderate reduction in emissions and/or exposure and/or behaviour change to facilitate the aforementioned	Large reduction in emissions and/or exposure and/or behaviour change to facilitate the aforementioned
		Protect and enhance social and health equality (H3)	Large negative impact to the protection and enhancement of social and health equality	Medium negative impact to the protection and enhancement of social and health equality	Small negative impact to the protection and enhancement of social and health equality	Possible/neutral/unknown	Small benefit to the protection and enhancement of social and health equality	Moderate benefit to the protection and enhancement of social and health equality	Large benefit to the protection and enhancement of social and health equality
Spatial Impact (SI)	10%	Scale of benefit within WMCA (SI1)		Applicable and actionable in 1 LA	Applicable and actionable in 2 LAs	Applicable and actionable in 3-4 LAs	Applicable and actionable 4-5 LAs	Applicable and actionable in all LAs	
		Address hotspots/areas of existing and future exceedance (SI2)		Worsen hotspots/areas of existing and future exceedance		Unlikely to address hotspots/areas of existing and future exceedance - Possible/ neutral/ unknown		Potential to address hotspots/areas of existing and future exceedance	
Alignment with Local and National measures/ policy (P)	15%	Compatible with achieving Environment Act 2021 PM2.5 targets (P1)	No			Possible/neutral/unknown			Yes
		Accelerate local authority Air Quality Action Plan measures (P2)	Negative impact on AQAP measures			Possible/neutral/unknown			Positive impact on AQAP measures
Cost, implementation and timescales (CIT)	25%	Implementation feasibility (CIT1)	Not feasible - Typically outside of the framework scope, not aligned or incompatible with national policy etc.	Unlikely to be feasible - Examples of feasibility issues: Weaker support, significant obstacles to implementation such as finances or policy		Unknown feasibility, but there is the potential that the option could be appraised in detail and be feasible		Feasible - Some support with some obstacles. May be a concept which is not as well established elsewhere or within the West Midlands	Certain/almost certain - Strong support with limited obstacles. Likely to be a well-established concept which has been implemented elsewhere or within the West Midlands Area
		Timescales for effective first implementation (CIT2)	>15 years	10-15 Years	5-10 years	3-4 Years	2-3 Years	1-2 Years	<1 Year
		Indicative implementation cost (CIT3)	>£5m	>£1m	>£500k	£250-500k	£100-250k	£50-100k	Officer time only or below £50k
		Health cost-benefit (CIT4)	Negative health cost-benefit			Neutral health cost-benefit or unknown			Positive health cost-benefit
Co-Benefits (CO)	10%	Accelerate transition to a low emission economy (including GHG and climate co-benefits) (CO1)		Detracting/slowing transition		Possible/neutral/unknown		Yes	
		Facilitate regional economic growth and ambition (CO2)		Hampering Growth and ambition		Possible/neutral/unknown		Yes	

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																								
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Achieve a zero emission West Midlands bus fleet by 2030 and consider use which brings greatest benefit to areas with poor air quality in the deployment strategy.	TRN8	TRN - Policy and interventions	2	2	3	2	2	3	3	2	2	2	3	2	2	7	4	6	9	4	6.75	1	1	1
To raise awareness of specific air quality issues and potential solutions associated with the use of log burners, fireplaces and bonfires.	EBC1	EBC - Domestic Emissions and Indoor Air Quality	2	2	1	2	0	3	3	3	3	2	3	2	0	5	2	6	11	2	6.05	1	1	2
Leverage campaigns for public transport, walking and cycling to promote the various co-benefits (including emissions and health) along with exposure mitigation.	EBC10	EBC - Transport	1	2	2	2	2	3	3	3	2	1	3	2	2	5	4	6	9	4	5.95	1	2	3
Introduce air quality neutral and/or air quality positive assessments into the planning process across the West Midlands.	PPG2	PPG - Regional planning and policy	2	2	2	2	2	3	3	2	1	2	3	2	0	6	4	6	8	2	5.90	1	1	4
Raise awareness of air quality issues and potential solutions associated with general domestic combustion.	EBC2	EBC - Domestic Emissions and Indoor Air Quality	2	2	0	2	0	3	3	3	3	2	3	2	0	4	2	6	11	2	5.65	2	3	5
Where solid fuel combustion is required, raise awareness to ensure the correct fuels are used (i.e. dry seasoned wood).	EBC3	EBC - Domestic Emissions and Indoor Air Quality	1	2	1	2	0	3	3	3	3	2	3	2	0	4	2	6	11	2	5.65	2	3	5
Support landlords and homeowners in accessing grants to retrofit.	DOM6	DOM - Supporting Actions	2	2	3	2	0	3	0	3	1	0	3	2	2	7	2	3	7	4	5.60	1	1	7
Scope for a “Net Health Gain” principle.	PPG5	PPG - Regional planning and policy	2	1	2	2	2	3	0	3	2	3	3	0	0	5	4	3	11	0	5.60	2	2	7

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																								
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Establish a region wide planning and design for air quality best practice document which will be kept updated with local, regional and national changes in guidance and legislation.	PPG1	PPG - Regional planning and policy	2	2	1	2	2	3	3	2	1	2	3	2	0	5	4	6	8	2	5.50	3	3	9
Including Health Impact Assessments (HIA) in planning applications and containing air quality.	PPG8	PPG - Regional planning and policy	2	1	2	2	2	0	3	3	2	2	3	0	0	5	4	3	10	0	5.35	4	4	10
Use health professionals to educate and disseminate targeted air quality information to vulnerable and at risk patients.	EBC27	EBC - Public Health	2	2	3	2	0	0	0	3	2	1	3	0	0	7	2	0	9	0	5.25	1	5	11
More stringent requirements within the planning process for expediting the transition from gas central heating.	DOM7	DOM - Policy	3	2	3	2	0	3	0	0	-1	2	3	2	2	8	2	3	4	4	5.25	1	2	11
Use low-cost sensors to capture high level domestic combustion data to be used in effective behavioural change advertisement and create real life stories/ case studies.	EBC9	EBC - Domestic Emissions and Indoor Air Quality	1	2	1	2	0	3	3	3	2	2	3	0	0	4	2	6	10	0	5.20	4	6	13
Engage with council and private housing organisations to increase awareness of indoor air quality issues and the actions that need to be taken to reduce the impacts.	EBC6	EBC - Domestic Emissions and Indoor Air Quality	2	1	3	2	0	0	0	2	2	3	3	0	0	6	2	0	10	0	5.10	5	7	14
Speed limit reduction (or dynamic speed limits) on high-speed roads.	TRN15	TRN - Policy and interventions	2	3	2	2	2	0	3	2	1	-1	3	2	0	7	4	3	5	2	5.10	2	2	14
Use a regional air quality website to deliver key air quality information and effective information to facilitate behavioural change through a single point for the West Midlands.	EBC31	EBC - Monitoring and digital	0	1	2	2	0	3	3	3	3	2	3	0	0	3	2	6	11	0	5.05	1	8	16

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Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Interactive online resources to demonstrate air quality issues.	EBC32	EBC - Monitoring and digital	0	1	2	2	0	3	3	3	3	2	3	0	0	3	2	6	11	0	5.05	1	8	16
Reduce Fuel Combustion by Improving home Energy Efficiency.	DOM1	DOM - Supporting Actions	3	2	3	2	0	3	0	2	1	-3	3	2	2	8	2	3	3	4	5.00	2	3	18
Supporting the transition from gas central heating.	DOM4	DOM - Supporting Actions	3	2	3	2	0	3	0	2	1	-3	3	2	2	8	2	3	3	4	5.00	2	3	18
Promote district heat networks (using heat pumps) for large developments.	PPG9	PPG - Regional planning and policy	1	1	2	2	0	3	0	2	2	2	3	2	2	4	2	3	9	4	4.90	5	5	20
Support and accelerate transition to zero emission bus fleet.	TRN7	TRN - Policy and interventions	2	2	2	2	2	3	3	2	1	-3	3	2	2	6	4	6	3	4	4.85	3	3	21
Land use planning - give preference to developments in locations that minimise the need to travel and/or propose sufficient facilities, which will therefore reduce operational impacts.	NBE8	NBE - Hard measures	1	2	2	2	0	3	0	2	1	2	3	2	0	5	2	3	8	2	4.85	1	1	21
Move away from the IAQM assessment criteria to both more stringent thresholds for detailed assessment and using health-based assessment for the quantification of impacts.	PPG11	PPG - Regional planning and policy	2	2	2	2	2	0	0	2	1	2	3	0	0	6	4	0	8	0	4.80	6	6	23
Use trusted advisors to disseminate air quality messaging (including faith leaders, GPs, nurses, fire service etc).	EBC34	EBC - General	1	1	2	2	0	3	0	3	2	2	3	0	0	4	2	3	10	0	4.75	1	10	24
Ensure that air quality communication and engagement are consistent and inclusive across the West Midlands (and modified where necessary) to make messaging as clear as possible with the best chance of behavioural change.	EBC38	EBC - General	0	1	2	2	0	0	3	3	2	3	3	0	0	3	2	3	11	0	4.60	2	11	25

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Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Promote transport schemes and road alterations that include effective green infrastructure to reduce exposure to poor air quality.	NBE2	NBE - Policy	2	2	2	2	0	0	0	2	1	2	3	0	0	6	2	0	8	0	4.60	1	2	25
Require the consideration of the co-benefits of site Masterplanning and ecological features on reducing exposure to poor air quality.	NBE3	NBE - Policy	2	2	2	2	0	0	0	2	1	2	3	0	0	6	2	0	8	0	4.60	1	2	25
Use damage cost contributions to effectively improve the environment and green infrastructure around new schemes.	NBE4	NBE - Policy	2	2	2	2	0	0	0	2	1	2	3	0	0	6	2	0	8	0	4.60	1	2	25
Incorporate air quality aspects into existing and future school/workplace/ development travel plans to reduce emissions and exposure to pollutants.	EBC13	EBC - Transport	1	1	1	2	0	0	3	3	2	2	3	2	0	3	2	3	10	2	4.55	2	12	29
Provide a centralised online public resource and/or platform for engagement and behaviour change co-ordination across the West Midlands.	EBC30	EBC - Planning, Policy, Governance and mechanisms for change	1	1	1	2	0	0	3	3	2	2	3	2	0	3	2	3	10	2	4.55	1	12	29
Smoke control area expansion.	DOM8	DOM - Policy	1	1	0	1	2	3	3	2	2	3	3	2	-2	2	3	6	10	0	4.50	2	5	31
Ensure that there is the sufficient assessment/ integration of transport plans and projects (such as area transport strategies and mitigation schemes) to ensure that the air quality impacts are quantified and where necessary, mitigated.	TRN1	TRN - Policy and interventions	0	1	3	2	2	0	3	2	1	2	3	0	0	4	4	3	8	0	4.45	4	4	32
Promote good practice with heating the home and drying clothing.	EBC7	EBC - Domestic Emissions and Indoor Air Quality	1	1	1	2	0	0	0	3	3	3	3	0	0	3	2	0	12	0	4.40	6	14	33

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																								
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Provide advice on how residents can utilise green spaces to improve health and reduce pollution exposure during exercise.	EBC19	EBC - Natural and Built Environment	0	1	2	2	0	0	0	3	3	3	3	0	0	3	2	0	12	0	4.40	1	14	33
Provide information on how residents can use planting and green infrastructure to reduce pollutant exposure and improve health/wellbeing.	EBC20	EBC - Natural and Built Environment	0	1	2	2	0	0	0	3	3	3	3	0	0	3	2	0	12	0	4.40	1	14	33
Increase the use of dense urban vegetation to create barriers between sources of pollution and places of exposure.	NBE7	NBE - Hard measures	2	2	2	2	0	0	0	2	1	1	3	0	0	6	2	0	7	0	4.35	2	5	36
Air quality innovation zones to sit alongside other programmes such as net zero neighbourhoods and industrial decarbonisation programmes.	CNZ3	CNZ -	3	3	3	-1	0	3	0	2	0	-2	0	2	2	9	-1	3	0	4	4.35	1	1	36
Coordination of approaches to solid fuel combustion (domestic, industry), including guidance for retailers, wholesalers.	EBC8	EBC - Domestic Emissions and Indoor Air Quality	1	1	1	2	0	3	0	2	2	2	3	2	0	3	2	3	9	2	4.30	7	17	38
Use the planning process to restrict the installation of new solid fuel appliances in the cases where planning consent is required.	DOM2	DOM - Supporting Actions	2	2	2	2	0	3	0	0	1	1	3	2	-2	6	2	3	5	0	4.30	4	6	38
Leverage modified biodiversity net gain (BNG) metrics to improve urban design and reduce exposure to poor air quality.	NBE1	NBE - Policy	1	1	2	2	0	0	0	2	2	3	3	0	0	4	2	0	10	0	4.30	4	6	38
Reduce parking for new developments where possible and local services are not available, ensure that transport needs are addressed and are improved in the local area.	TRN6	TRN - Policy and interventions	2	2	1	2	2	0	3	0	1	0	3	2	2	5	4	3	4	4	4.25	5	5	41

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																								
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Provide centralised support for local authorities in areas such as local plan policy to promote consistency and dealing with more complex air quality assessment methodologies.	PPG3	PPG - Regional planning and policy	1	1	1	2	2	3	3	2	1	0	3	2	0	3	4	6	6	2	4.20	7	7	42
Use mechanisms (such as future local plans) to enforce more stringent regional air quality limits/ compliance timescales.	PPG4	PPG - Regional planning and policy	1	1	1	2	2	3	3	0	0	3	3	2	0	3	4	6	6	2	4.20	7	7	42
NO _x , SO ₂ , VOC, PM abatement guidance and providing support on how this can be achieved/ funded.	CIA12	CIA - Industrial	1	2	1	2	2	3	0	0	1	2	3	2	0	4	4	3	6	2	4.15	1	1	44
Provide information on how to reduce personal exposure to poor air quality outside of the home and what can be benefits can be.	EBC25	EBC - Public Health	1	2	0	2	0	0	3	3	3	3	0	0	0	3	2	3	9	0	4.10	2	18	45
Consistent advice, policy and enforcement of dust abatement measures.	CIA16	CIA - Construction	1	1	1	2	2	0	0	3	2	2	3	0	0	3	4	0	10	0	4.10	1	2	45
Roll out tools to warn and update residents of poor air quality and supported by regional/local healthcare system.	PH1	PH - Tools and information	1	1	1	2	0	0	3	3	2	1	3	0	0	3	2	3	9	0	4.10	1	1	45
Develop guidelines for best practices for procurement that will support air quality improvements (e.g. use of Non-Road Mobile Machinery).	PPG6	PPG - Regional planning and policy	1	1	1	2	0	0	0	2	2	3	3	2	0	3	2	0	10	2	4.10	9	9	45
Provide guidance on how planning will consider the air quality and climate/ net zero co-benefits and disbenefits within the planning process and are addressed in a joined-up way by officers.	PPG13	PPG - Regional planning and policy	1	1	1	2	0	0	0	2	2	3	3	2	0	3	2	0	10	2	4.10	9	9	45

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Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Develop tools to reduce exposure to poor air quality outside of the home, such as journey planners linked to pollution modelling and real time data.	PH2	PH - Tools and information	1	2	0	2	0	0	3	2	2	1	3	2	0	3	2	3	8	2	4.05	2	2	50
Have a platform for WMCA and local authority officers to share ideas and plans for engagement to ensure that regional roll outs can happen, facilitate knowledge sharing and leverage combined procurement where applicable.	PPG17	PPG - Governance and mechanisms for change	0	0	1	2	0	0	3	3	3	3	3	0	0	1	2	3	12	0	4.05	1	11	50
Raise awareness of wider general indoor air quality issues, how to manage and potential solutions.	EBC4	EBC - Domestic Emissions and Indoor Air Quality	0	1	1	2	0	0	0	3	3	2	3	2	0	2	2	0	11	2	3.95	8	19	52
Research into the real-world exposure of West Midlands' residents (including the differences in exposure based on age and socio-economic situation) and what measures can be effectively implemented based on the findings.	PH5	PH - Research	1	1	3	2	0	0	0	2	1	1	3	0	0	5	2	0	7	0	3.95	1	3	52
Additional Clean Air Zones/ congestion charge zones which consider NO ₂ and other pollutants.	TRN3	TRN - Policy and interventions	3	3	0	2	2	3	3	0	0	-3	3	2	0	6	4	6	0	2	3.90	6	6	54
Create a route planning tool with modelled/real time air quality information so that people can reduce exposure when walking and/or make the decision to take public transport.	TRN24	TRN - Tools and digital	1	2	2	2	0	0	3	2	1	-1	3	0	0	5	2	3	5	0	3.90	1	6	54
Promote off-site construction and manufacturing.	CIA20	CIA - Construction	1	1	1	2	0	0	0	2	2	3	3	0	0	3	2	0	10	0	3.90	2	3	54

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																								
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking			
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank
Continue to roll out school streets programmes to reduce traffic and emissions in the vicinity of schools when there is transient exposure.	PPG14	PPG - Regional planning and policy	1	1	2	2	2	0	3	2	1	-1	3	2	0	4	4	3	5	2	3.90	11	12	54
Co-ordinate regional air quality upskilling and knowledge share for air quality officers.	PPG20	PPG - Skills and training	1	1	1	2	0	0	0	3	3	3	0	0	2	3	2	0	9	2	3.85	1	13	58
Engage with large transport providers such as rail/ station operators and Birmingham Airport and promote greater integration of air quality into net zero and climate plans.	CNZ5	CNZ -	1	1	1	1	2	3	3	2	1	2	0	2	0	3	3	6	5	2	3.85	2	2	58
Have an open route for communication and co-ordination between comms teams at the WMCA and local authorities to be able to effectively co-ordinate and deliver air quality communications.	EBC39	EBC - General	0	1	0	2	0	0	3	3	2	3	3	0	0	1	2	3	11	0	3.80	3	20	60
Increased scrutiny and consideration of health impacts relating to heat/power generation from biomass/waste/ incineration.	CIA4	CIA - General	1	2	1	2	0	3	0	0	1	3	3	-2	0	4	2	3	7	-2	3.80	1	4	60
Introduce a West Midlands schools accreditation and education scheme for air quality.	PH4	PH - Tools and information	1	1	1	2	2	0	3	2	1	1	3	0	0	3	4	3	7	0	3.80	3	4	60
Set minimum environmental requirements for each Local Plan site allocation, which sets out requirements well in advance of the planning stage.	PPG10	PPG - Regional planning and policy	1	1	2	2	0	0	0	2	1	2	3	0	0	4	2	0	8	0	3.80	12	14	60
Use street furniture and natural features to reduce exposure and create barriers at key waiting locations.	NBE10	NBE - Hard measures	1	1	3	2	0	0	0	2	1	0	3	0	0	5	2	0	6	0	3.70	3	7	64

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Provide grant and project co-ordination through the WMCA to ensure that there is consistency across the West Midlands and procurement is effective.	PPG18	PPG - Governance and mechanisms for change	1	0	1	2	0	3	0	3	3	3	0	0	0	2	2	3	9	0	3.70	2	15	64
Work with existing public health channels to deliver consistent messaging across the West Midlands.	EBC29	EBC - Public Health	1	1	1	2	0	0	0	2	2	2	3	0	0	3	2	0	9	0	3.65	3	21	66
Use planning conditions/ S106 for new developments to reduce the number of car trips near schools restricting access to staff during certain times.	PPG12	PPG - Regional planning and policy	1	1	2	2	2	3	0	0	0	1	3	2	0	4	4	3	4	2	3.65	13	16	66
Construction of new high quality cycle tracks and other cycle infrastructure in accord with West Midlands cycle network planning, including links between key developments and key services to promote mode shift from car.	NBE11	NBE - Hard measures	2	2	2	2	0	0	0	2	1	-2	3	0	0	6	2	0	4	0	3.60	4	8	68
Develop a toolbox of measures that local authorities can easily implement and have pre-packaged communications packages that local authorities can use to promote the measures.	PH3	PH - Tools and information	1	1	1	2	0	0	3	2	1	1	3	0	0	3	2	3	7	0	3.60	4	5	68
Integrate AQ considerations (evaluated as population health benefit) into WMCA policy where relevant.	PPG7	PPG - Regional planning and policy	1	1	1	2	0	3	0	2	2	3	0	0	0	3	2	3	7	0	3.60	14	17	68
Develop and deliver a consistent regional schools engagement programme across the West Midlands, with flexibility to account for variations across the area (such as city vs suburban locations).	EBC28	EBC - Public Health	1	1	1	2	2	0	3	2	1	0	3	0	0	3	4	3	6	0	3.55	4	22	71

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Investigate the lowering and enforcement of speed limits in urban centres and residential areas to address localised transport related air pollution and increase active travel. This includes further roll-out of 20 mph speed limits.	TRN16	TRN - Policy and interventions	1	2	2	2	2	0	3	0	1	-2	3	2	0	5	4	3	2	2	3.55	7	8	71
Designating new & priority bus measures.	TRN9	TRN - Policy and interventions	1	2	2	2	2	0	3	2	-1	-3	3	2	2	5	4	3	1	4	3.50	8	9	73
Working through the Natural Environment Plan to identify best uses of green infrastructure for air quality.	NBE5	NBE - Policy	0	1	1	2	0	0	0	2	2	3	3	0	0	2	2	0	10	0	3.50	5	9	73
Undertake advertisement campaigns when interventions are ongoing to raise awareness and to co-promote at the time, rather than afterwards.	EBC35	EBC - General	0	1	1	2	0	0	3	3	2	2	0	2	0	2	2	3	7	2	3.40	4	23	75
Enforce and expand restrictions on domestic use of solid fuels from existing appliances.	DOM3	DOM - Supporting Actions	2	2	3	2	0	3	0	-2	1	-3	3	2	0	7	2	3	-1	2	3.40	5	7	75
Use a centralised West Midlands air quality network website as a data store to enable various analyses such as trends and the quantification of the impact of air quality measures.	MON4	MON - Monitoring and Data	0	1	2	2	0	0	0	3	3	2	0	0	0	3	2	0	8	0	3.40	1	1	75
HGV bans/restrictions in urban centres, including out of hours freight delivery.	TRN17	TRN - Policy and interventions	2	2	1	2	2	0	3	0	1	-2	3	0	0	5	4	3	2	0	3.35	9	10	78
Discourage investment in biomass fuelled heat/power and potential for regulating biomass combustion plants <1MW.	CIA11	CIA - Industrial	1	2	1	2	0	3	0	0	1	2	3	-2	-2	4	2	3	6	-4	3.35	2	5	78

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Develop a small public health toolkit between stakeholders which standardises air quality communications and phrases across the West Midlands to ensure that communications are consistent and effective.	EBC26	EBC - Public Health	0	0	1	2	0	0	3	3	3	3	0	0	0	1	2	3	9	0	3.30	5	24	80
Use public engagement panels (such as the Greener Together Citizens Panel) to test communication and messaging where possible to get feedback on how campaigns will be perceived.	EBC33	EBC - General	0	1	0	2	0	0	3	3	3	3	0	0	0	1	2	3	9	0	3.30	5	24	80
Vehicle procurement best practice documentation and guidance.	TRN12	TRN - Policy and interventions	0	1	0	2	0	0	3	3	3	3	0	0	0	1	2	3	9	0	3.30	10	11	80
Zero emission final mile delivery measures.	TRN18	TRN - Policy and interventions	2	2	1	2	2	0	3	0	1	-3	3	0	2	5	4	3	1	2	3.30	10	11	80
Increase/establish co-working with the Environment Agency to enforce permits.	CIA5	CIA - General	1	1	1	2	2	3	0	0	1	1	3	0	0	3	4	3	5	0	3.30	2	6	80
Facilitate and promote access to funding for commercial retrofit of heating and cooling systems.	CIA9	CIA - Commercial	1	1	1	2	0	0	0	2	2	2	0	2	2	3	2	0	6	4	3.30	1	6	80
Provide guidance on how the changing climate will affect air quality (and potentially other areas) and how this can be mitigated and be a co-benefit.	CNZ2	CNZ -	1	1	1	2	0	3	0	2	1	2	0	2	0	3	2	3	5	2	3.30	3	3	80
Promote vehicle sharing.	EBC14	EBC - Transport	1	1	0	2	0	0	0	3	3	3	0	0	0	2	2	0	9	0	3.25	3	26	87
Understand where air quality can be integrated into communications and programmes on solar/renewables/heat pump and used to highlight benefits and general air quality awareness.	CNZ4	CNZ -	1	1	1	2	0	3	0	2	1	1	0	2	2	3	2	3	4	4	3.25	4	4	87

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Non-Domestic Buildings - Reduce fuel combustion by improving energy efficiency through grants and guidance.	CIA2	CIA - General	2	2	1	2	0	3	0	0	0	-3	3	2	2	5	2	3	0	4	3.05	3	8	89
Have a centrally managed regional air quality assembly to provide support, guidance and co-ordination for local authorities and to ensure where possible, there is consistency, open communication channels and leveraging opportunities for funding etc.	PPG15	PPG - Governance and mechanisms for change	0	0	0	2	0	0	3	3	3	3	0	0	0	0	2	3	9	0	2.90	3	18	90
Coordinate regional approaches to government on policy and resources to tackle air quality challenges (DEFRA, HMT and key partners, e.g., Environment Agency, National Highways).	PPG16	PPG - Governance and mechanisms for change	0	0	0	2	0	0	3	3	3	3	0	0	0	0	2	3	9	0	2.90	3	18	90
Establish a West Midlands wide low-cost sensor network, with an associated standalone website that includes existing regional data, enable other systems (such as an alert system) and air quality information that is effective for behaviour change.	MON1	MON - Monitoring and Data	0	1	2	2	0	0	0	3	3	0	0	0	0	3	2	0	6	0	2.90	2	2	90
Prominent signage in key areas/hotspots to display air quality information.	EBC36	EBC - General	1	1	1	2	2	0	3	0	2	2	0	0	-2	3	4	3	4	-2	2.85	6	27	93
Undertake audits of the local authority commercial building stock to determine what measures can be implemented.	CIA6	CIA - General	1	1	0	2	0	3	0	2	1	1	0	2	2	2	2	3	4	4	2.85	4	9	93

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Provide training for members/decision makers/ local authority officers through a standalone air quality literacy training programme to ensure they are up to date on air quality matters.	PPG19	PPG - Skills and training	0	0	1	2	0	0	0	3	3	3	0	0	0	1	2	0	9	0	2.85	2	20	93
Explore the case for workplace parking levies and other effective demand management measures as part of area strategies for the West Midlands.	TRN11	TRN - Policy and interventions	1	2	0	2	0	0	3	2	0	-2	3	2	0	3	2	3	3	2	2.80	12	13	96
Non-domestic buildings – Transformation of heating away from the combustion of fuels.	CIA3	CIA - General	2	2	1	2	0	3	0	0	-1	-3	3	2	2	5	2	3	-1	4	2.80	5	10	96
Training for behavioural changes in construction management, processes and methods.	EBC23	EBC - Commercial, Industrial and Agriculture	1	1	1	2	0	3	3	0	1	0	0	2	0	3	2	6	1	2	2.75	1	28	98
Region wide NRMM emission standards (such as stage V NRMM retrofit/ Provisional GB Type Approval Scheme).	CIA17	CIA - Construction	1	1	1	2	2	3	0	0	0	2	0	2	0	3	4	3	2	2	2.75	3	11	98
Promote electric and/or hydrogen powered NRMM.	CIA18	CIA - Construction	1	1	1	2	2	3	0	0	0	2	0	2	0	3	4	3	2	2	2.75	3	11	98
Promote the use of hybrid generators.	CIA19	CIA - Construction	1	1	1	2	2	3	0	0	0	2	0	2	0	3	4	3	2	2	2.75	3	11	98
Active traffic light management to smooth traffic flows and reduce idling.	TRN13	TRN - Policy and interventions	1	1	0	2	2	0	3	3	2	-1	0	0	0	2	4	3	4	0	2.65	13	14	102
Creation of Low Traffic Neighbourhoods and local area environmental traffic management as part of the design of new developments which promotes sustainable transport use.	NBE9	NBE - Hard measures	0	1	1	2	0	3	0	2	1	-2	3	2	0	2	2	3	4	2	2.65	5	10	102
High occupancy vehicle lanes and/or greater priority for buses and other public transport.	TRN20	TRN - Policy and interventions	1	1	1	2	2	0	3	2	1	-1	0	0	0	3	4	3	2	0	2.55	14	15	104

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Revisions to garden waste collections to reduce the instances of bonfires within urban areas.	DOM9	DOM - Policy	1	1	2	2	0	0	0	-2	1	0	3	2	0	4	2	0	2	2	2.50	3	8	105
Metrics for improving air quality, to capture co-benefits from net zero actions and for policy to reduce regional health inequalities.	CNZ1	CNZ -	0	0	1	2	0	3	0	2	1	2	0	2	0	1	2	3	5	2	2.50	5	5	105
Undertake audits of the local authority school and housing stock to determine what measures can be implemented. Promote co-working with housing teams to improve indoor air quality outcomes.	DOM5	DOM - Supporting Actions	0	0	2	2	0	0	0	2	2	1	0	2	0	2	2	0	5	2	2.45	6	9	107
Support and accelerate transition to zero emission HGV fleet, especially in urban centres.	TRN27	TRN - Supporting research	1	1	1	2	2	3	3	0	1	-2	0	2	0	3	4	6	-1	2	2.45	1	16	107
Redesign bus stops and other minor waiting locations (where there will be transient exposure to high concentrations).	TRN23	TRN - Policy and interventions	1	1	1	2	0	0	0	2	2	0	0	0	0	3	2	0	4	0	2.40	15	17	109
Increase tree planting of suitable species along key road routes to reduce pollutant exposure.	NBE6	NBE - Hard measures	1	1	1	2	0	0	0	2	1	1	0	0	0	3	2	0	4	0	2.40	6	11	109
Promotion of best driving practices, including supporting on driving techniques for hybrid and electric vehicles; and ensuring correct tyre pressures and wheel alignment.	EBC15	EBC - Transport	1	1	0	2	0	0	0	0	2	3	0	0	0	2	2	0	5	0	2.25	4	29	111
Implementation of new road surface compositions/ construction methods and road treatments once research reveals effective solutions.	TRN22	TRN - Policy and interventions	2	2	2	2	0	3	0	0	-1	-3	0	0	2	6	2	3	-4	2	2.25	16	18	111
Advice/guidance on fuel choice and usage for farm equipment.	CIA15	CIA - Agriculture	0	1	0	-1	0	3	0	2	2	2	0	0	0	1	-1	3	6	0	2.25	1	14	111

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Understand the relative importance of within-region emissions and transported air pollution for WMCA air quality.	MON5	MON - Research	0	0	0	2	0	0	0	3	3	2	0	0	0	0	2	0	8	0	2.20	1	3	114
Providing a region wide driver training module to incorporate eco-driving messaging (including idling).	EBC11	EBC - Transport	1	1	0	2	2	0	3	0	1	1	0	0	0	2	4	3	2	0	2.15	5	30	115
Consistent anti-idling campaigns across the West Midlands.	EBC12	EBC - Transport	1	1	0	2	2	0	3	0	1	1	0	0	0	2	4	3	2	0	2.15	5	30	115
Use existing training mechanisms to inform professional drivers (both road and rail) of the relevant best practice measures and techniques to reduce emissions where possible.	EBC16	EBC - Transport	1	1	1	2	0	0	0	0	1	2	0	0	0	3	2	0	3	0	2.15	5	30	115
Investigate how air quality can be made tangible (unlike other issues such as noise) through measures such as temporary street closures (using street party regulations) so that people can see the difference when action is taken.	EBC37	EBC - General	0	1	0	2	0	0	0	2	2	2	0	0	0	1	2	0	6	0	2.10	7	33	118
Priority parking and/or reduced charges for low emission vehicles.	TRN19	TRN - Policy and interventions	1	1	-1	2	0	0	3	0	3	1	0	0	0	1	2	3	4	0	2.05	17	19	119
Use portable and fixed signage to highlight air quality issues and why actions (such as speed limit reductions) are in place.	EBC18	EBC - Transport	0	1	0	2	2	0	3	2	2	-1	0	0	0	1	4	3	3	0	2.00	8	34	120
Development of more local sustainable energy generation capacity and associated battery storage.	CIA7	CIA - General	1	1	1	2	0	3	0	0	-1	-3	3	2	2	3	2	3	-1	4	2.00	6	15	120
Engage and inform the public on key commercial, industrial and agricultural issues.	EBC21	EBC - Commercial, Industrial and Agriculture	0	0	0	2	0	0	0	3	2	2	0	0	0	0	2	0	7	0	1.95	2	35	122

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West Midlands wide fleet recognition schemes to promote LEV.	TRN14	TRN - Policy and interventions	0	1	0	2	0	3	3	0	1	0	0	2	0	1	2	6	1	2	1.95	18	20	122
Establish regional standards on air quality monitoring covering all monitoring types to ensure that the data being acquired is robust and the equipment used is to a minimum standard.	MON2	MON - Monitoring and Data	0	0	0	2	0	0	0	2	2	3	0	0	0	0	2	0	7	0	1.95	3	4	122
Establish a pathway for streamlined procurement of air quality monitoring equipment and resources to both leverage economies of scale and ensuring that the correct equipment is purchased based on the regional standards.	MON3	MON - Monitoring and Data	0	0	0	2	0	0	0	2	2	3	0	0	0	0	2	0	7	0	1.95	3	4	122
Understanding real-world emissions to underpin policy, e.g. identifying largest emitters across actual WM fleet (all vehicles).	MON6	MON -	0	0	0	2	0	0	0	3	2	2	0	0	0	0	2	0	7	0	1.95	2	4	122
Promotion of home working and reducing commuting related trips.	EBC17	EBC - Transport	0	1	0	2	0	0	0	0	3	3	0	0	-2	1	2	0	6	-2	1.90	9	36	127
Park and ride schemes.	TRN10	TRN - Policy and interventions	1	1	1	2	2	3	3	-2	0	-2	0	2	2	3	4	6	-4	4	1.90	19	21	127
Create an emissions 'health check'/audit programme for commercial, industrial and agricultural businesses to engage with and determine how they can reduce their emissions and what support is available.	CIA1	CIA - General	0	0	0	2	0	3	0	3	2	0	0	0	0	0	2	3	5	0	1.90	7	16	127
Promote electric transport refrigeration units (TRUs).	CIA8	CIA - Commercial	0	1	0	2	0	0	3	0	1	2	0	0	0	1	2	3	3	0	1.80	2	17	130
Region wide industrial off-road mobile and stationary machinery emission controls.	CIA10	CIA - Commercial	0	1	0	2	0	0	3	0	1	2	0	0	0	1	2	3	3	0	1.80	2	17	130

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Provide advice on best practice regarding the use of fertilisers and what can easily be changed to reduce emissions of pollutants and secondary aerosol formation.	CIA13	CIA - Agriculture	0	1	0	-1	0	3	0	0	2	2	0	0	0	1	-1	3	4	0	1.75	2	19	132
Promoting low emission spreading.	CIA14	CIA - Agriculture	0	1	0	-1	0	3	0	0	2	2	0	0	0	1	-1	3	4	0	1.75	2	19	132
Introduction of new Low Traffic Neighbourhoods and local area environmental traffic management measures.	TRN4	TRN - Policy and interventions	1	1	1	2	0	0	0	2	2	-3	0	0	0	3	2	0	1	0	1.65	20	22	134
Promote the benefits to changes in livestock diet.	EBC24	EBC - Commercial, Industrial and Agriculture	0	1	0	2	0	3	0	0	1	0	0	2	0	1	2	3	1	2	1.50	3	37	135
Taxi driver licencing change to enforce low emissions vehicles.	TRN2	TRN - Policy and interventions	1	1	1	1	0	3	0	-2	0	1	0	0	0	3	1	3	-1	0	1.50	21	23	135
Research on the effectiveness of new technologies for reducing pollutant concentrations in the built environment.	NBE12	NBE - Supporting research	0	0	0	2	0	0	3	2	1	0	0	0	0	0	2	3	3	0	1.40	1	12	137
Research the sources and methods for effective secondary aerosol formation reduction and how these can be implemented across commercial, industrial and agriculture.	CIA21	CIA - Research	0	0	0	2	0	3	0	2	1	0	0	0	0	0	2	3	3	0	1.40	1	21	137
Research and 'test-bed' implementation of new road surface composition and construction to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	TRN25	TRN - Supporting research	0	0	0	2	0	3	0	0	0	0	0	0	2	0	2	3	0	2	0.85	2	24	139

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Research and 'test-bed' implementation of new tyre composition and manufacturing techniques to reduce particulate emissions, particularly from battery electric vehicles (BEVs).	TRN26	TRN - Supporting research	0	0	0	2	0	3	0	0	0	0	0	0	2	0	2	3	0	2	0.85	2	24	139
Research and 'test-bed' implementation of road treatments to reduce resuspension.	TRN28	TRN - Supporting research	0	0	0	2	0	3	0	0	0	0	0	2	0	2	3	0	2	0.85	2	24	139	
Behaviour change in food consumption.	EBC22	EBC - Commercial, Industrial and Agriculture	0	1	-1	-1	0	3	0	-2	2	1	0	2	0	0	-1	3	1	2	0.80	4	38	142
Improved anti-idling enforcement.	TRN5	TRN - Policy and interventions	0	1	0	2	0	0	3	-2	2	-1	0	0	0	1	2	3	-1	0	0.80	22	27	142
Engage with estate, letting agents to increase market awareness of indoor air quality issues.	EBC5	EBC - Domestic Emissions and Indoor Air Quality	0	1	0	2	0	0	0	-2	0	1	0	0	0	1	2	0	-1	0	0.35	9	39	144
Implement exposure reduction measures at major transport hubs.	TRN21	TRN - Policy and interventions	1	1	0	2	0	0	0	0	-1	-3	0	0	0	2	2	0	-4	0	0.00	23	28	145
Roadside vehicle emissions tests and checks for defective Diesel Particulate Filters (DPF)		EBC - Transport														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Promote biofuels in passenger vehicles		EBC - Transport														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Promote abatement retrofit		EBC - Transport														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Log burner scrappage scheme		DOM - Policy														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Enforcement of zero-emission bus fleet		TRN - Policy and interventions														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Region wide EV charging scheme, with WMCA/ TfWM providing support and local authorities investigating releasing land to enable widespread installation and adoption		TRN - Policy and interventions														N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A

Table D.4 – Multiple-criteria Decision Analysis (MCDA) Summary and Ranking																													
Option	Framework Option Code	Theme and Sub-Category	Qualitative Criteria													Criteria Totals and Weighted Scoring					Ranking								
			H1	H2	H3	SI1	SI2	P1	P2	CIT1	CIT2	CIT3	CIT4	CO1	CO2	H	SI	P	CIT	CO	Weighted Score	Intra-theme Subcategory	Theme Rank	Full Rank					
Provision of school buses		TRN - Policy and interventions																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Lorry overtaking bans on major roads		TRN - Policy and interventions																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Enforcement to prevent removal/defeat of emission control devices		CIA - General																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Monitoring and improved fugitive emissions capture		CIA - Industrial																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Precision equipment for improving construction efficiency		CIA - Construction																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Installation emission concentration limits: Cost Benefit Analysis (CBA) based-permitting		PPG - Regional planning and policy																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A
Air quality emission trading schemes		PPG - Regional planning and policy																			N/A	N/A	N/A	N/A	N/A	Not Appraised past RAG stage	N/A	N/A	N/A

Appendix E – WMCA Greener Together Citizens’ Panel Guiding Principles in Detail

Table E.1 – Greener Together Citizens’ Panel Guiding Principles in Detail: Cost, Responsibility and Accountability				
Cost, Responsibility and Accountability				
No	Principle	If someone asked you why this is so important, what would you say?	Who needs to be involved to ensure this principle is followed? What would that look like in practice?	Think about the obstacles the WMCA might face around air quality measures - how could these principles help them navigate those and make good decisions?
1	Brave and bold	We have seen how tough decisions have been avoided over many years because four-year political cycles are not an incentive to long-term planning. So we need our leaders to grasp the nettle on these issues, even when it is difficult.	<p>This is about people in positions of power showing leadership, taking the actions they know need to be taken even when they are difficult.</p> <p>This does not mean forging forward without us, it means being ambitious and bold in centering fairness, inclusion, transparency and equality.</p> <p>We should treat this as a once in a lifetime opportunity to produce a landmark proposal that seeks to compel the authorities to invest in infrastructure to make meaningful change.</p>	<p>Where decisions could be hard or unpopular, this principle needs to be in their minds.</p> <p>Conflict between groups and their different interests may hinder decisions.</p>
2	Clear and transparent in their purpose and, where they generate income, how this will be spent.	<p>It is important that people know how money to improve air quality is being spent - where does it come from and where does it go?</p> <p>A good decision is one that involves stakeholders as much as possible, and people are more likely to engage with something when they understand why it is necessary and how it will work.</p>	<p>The council and others who receive revenues from this type of scheme (like businesses) should be involved to ensure this principle is followed.</p> <p>In practice a regulatory board that is impartial could check that the WMCA is being transparent and making fair decisions.</p>	<p>An obstacle is that people trying to be transparent can end up using jargon which is unhelpful. Messages need to be clear. This will make it more likely that the decisions and implementation will be accepted.</p>
3	Placing the burden of change on the broadest shoulders, ensuring that specific groups are not disadvantaged by higher living costs and protecting the most vulnerable.	<p>Transition needs to be fair. Some people can’t afford to make the lifestyle changes that will be asked of them so need to be helped - otherwise people won’t support the change.</p> <p>It is important that all voices are heard and more dominant voices don’t crowd the space. Making sure that it is inclusive and practical for all - including people on low incomes -will allow everyone to have access to the same information and to benefit from the measures implemented.</p>	<p>Representatives of the population like councils and government should be involved in implementing this. If businesses are making decisions that pass costs onto customers they should also be involved.</p> <p>Representative organisations, housing associations, community anchor organisations and community centres should all be involved to extend outreach to different groups.</p> <p>A people’s panel should be created to address decision makers directly each month. This should start with the WMCA at the top and include the people and citizen panel.</p> <p>Engaging with schools is also important as education from early years is a different approach to change.</p>	<p>By considering the difference in cost to different people when making decisions, people will be more bought into the decisions.</p>
4	Good value for money for councils so that council tax bills don’t increase as a result	<p>Money is needed to maintain existing council services such as social services and libraries and this should not be reallocated. People will not want their council tax to increase to cover the costs of making these changes.</p> <p>“Public services are diminishing anyway, and we don’t want to add to that or there will be nothing left.”</p>	<p>Environmental charities, local organisations and volunteers, transport agencies, and MPs should be involved in making this happen as well as councils. WMCA and councils should ring-fence funds so that they do not evaporate, and big stakeholders in local businesses should use something like a cost-sharing scheme, rather than drawing on public funding.</p>	<p>An obstacle is that council budgets and funding set aside for green initiatives will not be equal in all council areas.</p>
5	Putting public benefit before corporate interests and avoiding monopolies being created	<p>If the aim is profit, only a minority of people will benefit, so the interest of profit-making must be secondary to the needs of stakeholders. “(The)people are the majority”.</p> <p>“Money gets spent and it disappears, and the people get to hear about it years later. We need to be involved in the process and it needs to be transparent and clear and accessible all of the time.”</p> <p>“Private companies are not going to pay for Citizens assemblies are they?”</p>	<p>Citizens panel members should be able to sit for a sufficient period of time (12-24 months) in order to make an impact.</p> <p>“Council lead, citizen accountable.”</p> <p>Local organisations should oversee where the money goes and how it is managed. A robust supply chain with trusted suppliers should be ensured. If it is to be privatised, the government should ensure this is well regulated so that no unethical practices occur.</p>	<p>The impact on stakeholders should be put above profits for shareholders.</p> <p>Non-profit organisations could be used to support these services, rather than companies and businesses. This will lead to accountability and transparency, and in turn lead to a successful council being power benefiting a majority of people.</p>

Table E.2 – Greener Together Citizens’ Panel Guiding Principles in Detail: Engagement, Education and Awareness				
Engagement, Education and Awareness				
No	Principle	If someone asked you why this is so important, what would you say?	Who needs to be involved to ensure this principle is followed? What would that look like in practice?	Think about the obstacles the WMCA might face around air quality measures - how could these principles help them navigate those and make good decisions?
6	Done with, not to, people, involving a range of people and areas in the design process	<p>It is important for people to have ownership and be part of decision making processes. The more people are engaged, the easier it is to make change, and representing different parts of a community means more people are involved. This is empowering for communities and creates more opportunities for continuous improvement.</p> <p>The public has a right to know where their taxes are being spent.</p> <p>“We need to continue the Citizen panel approach. We are the people of the West Midlands Combined Authority and we should be heard.”</p>	<p>Continue the Citizens’ Panel approach for decision making and think about the infrastructure changes that will support behaviour change.</p> <p>The sortition approach used to select the Greener Together Panel should be the goal, and the net should be cast wide to bring diverse individual citizens on board. SME’s, local authorities, and representatives from the national government should be involved.</p> <p>Continuity of the same people on the citizens panel will ensure an understanding of the issues and increase the chance for impact.</p> <p>Also, citizens should have more rights to support and develop green initiatives in their local area.</p>	<p>Conflicts between different groups that can be reduced by having diversity and representation of all groups and support of all to understand the process ,e.g through training.</p> <p>Engaging a wide range of people: working through existing organisations that have credibility with different parts of the community (e.g. older people) could help overcome this.</p> <p>Resources: good engagement may require a lot of time and money to work. This would require politicians to buy-into its importance.</p>
7	Clearly explained to the public, including why they are necessary and what impacts they are designed to have.	<p>People won’t make changes if they aren’t educated on the problem. Increasing people’s knowledge will encourage shared ownership of the problem and help make a sustainable long term change.</p> <p>“If people are going by hearsay then they are less likely to follow campaigns for air quality.”</p> <p>Misinformation can jeopardise any campaigns that you are trying to implement.</p>	<p>“Everybody” should be involved in educating, including parents, schools, neighbourhoods and community groups.</p> <p>Social media and TV organisations should work with local councils, experts and the central government to create and distribute knowledge.</p>	<p>An obstacle is to consider what education will look like in practice for different people.</p>
8	Making people aware of what changes are taking place and how to manage those accessibility, alternative provision and any support if they need it	<p>Some measures will require people to make changes in their lives which some will find difficult. Where support is put in place to help people through that change, or to make sure they can still access a service they need in other ways, they need to know about it.</p> <p>“If people don’t know about it they won’t use it”.</p>	<p>Schools, colleges and universities should all be involved to help publicise and increase awareness.</p> <p>Community centres, impartial community leaders and local small businesses should also be involved.</p> <p>Local councils can spread information through leaflets, TV, radio and the internet. The councils can gain widespread publicity via for example council tax bills, posters in public libraries and swimming pools and tags on dustbins.</p>	<p>An obstacle is that people who already live in ‘green areas’ think these problems don’t concern them so may be less engaged in the changes they need to make too.</p>

Table E.3 – Greener Together Citizens’ Panel Guiding Principles in Detail: Implementation

Implementation				
No	Principle	If someone asked you why this is so important, what would you say?	Who needs to be involved to ensure this principle is followed? What would that look like in practice?	Think about the obstacles the WMCA might face around air quality measures - how could these principles help them navigate those and make good decisions?
9	Putting new services in place before removing old ones	<p>People need awareness of and confidence in alternatives before taking away the service or facility they currently use.</p> <p>For example, make sure public transport improvements are done before making it more expensive and difficult to drive and park.</p> <p>The more disruption caused, the less the public will have faith in the replacement - bike lanes in Coventry were given as an example.</p>	<p>The WMCA and the council should ensure that the planning and implementation is complete before commissioning new services. The people living in affected communities and areas should be involved to ensure this, as well as health professionals and affected businesses.</p>	<p>A big obstacle is the timescale. There might not be enough time to implement the changes before needing to take away the faulty or outdated services. Public interest might also move onto something else over time.</p> <p>Another obstacle may be rebellion from groups who either don't want change, or have been inconvenienced by the change.</p>
10	Achievable, sustainable, measurable and long-term	<p>There need to be ongoing checks on impact and progress, with both continuous improvement and ongoing investment.</p> <p>If people consider the long-term benefits they are more likely to participate.</p> <p>“It needs to be achievable so that ordinary people can do something realistic.”</p> <p>If a project set-up is maintained for the long-term and seen as achievable, people will have more trust and believe in future initiatives instead of thinking they are “just throwing away money.”</p>	<p>Field professionals should be involved by regularly testing and overseeing impact and communities should ensure and encourage that measures are being followed.</p> <p>Councils and the WMCA should be involved by enforcing robust KPIs and local authorities should send out annual impact assessments and surveys.</p> <p>Big businesses could also be involved in making sure this happens.</p>	<p>The WMCA may face obstacles concerning finances and measuring achievability.</p> <p>Changes in power and policy through local elections may also cause difficulties, especially as the WMCA relies on the Government to prioritise these issues.</p>
11	Taking into account how impacts will be felt by neighbouring areas	<p>There needs to be a ‘whole community’ focus on impact.</p> <p>An example of when this is needed is when one area implements traffic restrictions which impact a neighbouring area.</p> <p>Taking a joined-up approach maximises the benefits of new measures and helps communities and local organisations build trust. This will draw communities together.</p>	<p>The WMCA should coordinate with the councils and councils in other areas. Local organisations and societies and citizens should report any concerns, and local communities can create focus groups to share ideas and concerns.</p>	<p>An obstacle is that it is hard to envision impact and changes to surrounding areas. This may make it difficult to build the trust and clarity needed to get people to participate.</p>
12	Data-driven and evidence-based, learning where possible from other countries and other parts of the UK	<p>Interventions will be easier to implement if the data clearly supports it and people know you are making good decisions based on evidence.</p> <p>Good use of data should make it easier to create bespoke interventions for different areas where the data shows variance in experience.</p>	<p>The WMCA has should play the key part here, and businesses should follow guidelines set out by the WMCA.</p> <p>Learn from other countries and places in the UK and think about what incentives are helpful and which incentives might be short term but not work longer term.</p>	<p>There is a lot of data available, and there is a need to be clear on what is going to be measured - health being a key measure.</p> <p>There are long term investments needed to deliver high quality data, and there is likely a need for delivery partners for this. There is also a need to understand the financial trade-offs as much as possible.</p>
13	Using incentivisation rather than punishment where possible and enable people to change their behaviour in positive ways.	<p>Positive incentives can motivate new behaviours and create new habits and ways of doing things, which can create a culture shift. It can also be cheaper to pay for positive behaviours than paying to fix things. This is important as it supports other principles.</p>	<p>This should start with the WMCA at the top and include people and the citizens panel. The stakeholder organisations should be involved to support the message.</p>	<p>An obstacle may be lack of will from the offset to provide initial costs for long-term gain, and having a budget that reflects the significance of the challenges we face.</p> <p>People need a good design to make it easier to do good and live positively.</p> <p>A clear communication plan will be needed to reinforce positive impact and retain buy-in.</p>