Air Quality Assessment	
Monmouth, Monmouthshire	
Job number:	J0894
Document number:	J0894/1/F1
Date:	17 October 2024
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1.1. Proposed Development

1.1.1 Air Quality Assessments Ltd (AQA) has been commissioned by Tilbury Douglas Construction Limited to undertake an air quality assessment for the proposed development of a health centre at Osbaston Road, Monmouth, Monmouthshire, NP25 3AX. The application site location is shown in **Figure 1**.

1.2. Scope of Assessment

1.2.1 This report describes the existing air quality conditions in proximity to the site and considers the effect of the development on local air quality and the effect of existing air quality on the development itself. The main air pollutants of concern related to the health effects of road traffic emissions are NO_2 and fine particulate matter (PM_{10} and $PM_{2.5}$).

1.2.2 There is also the potential for the construction works to impact upon existing properties. The main pollutants of concern related to construction activities are dust and PM_{10}.

1.2.3 The assessment has been prepared taking into account all relevant local and national guidance and regulations.

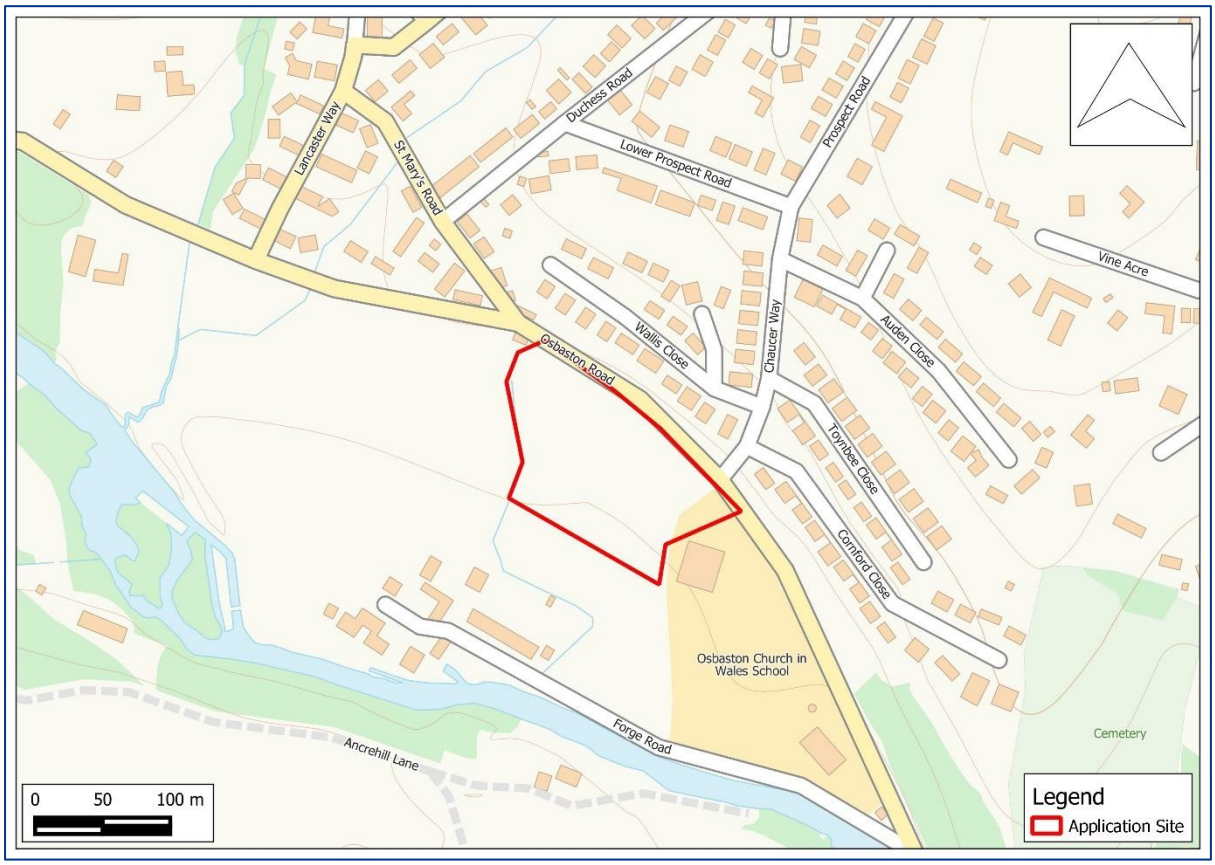

Figure 1: Application Site
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2 Air Quality Legislation and Policy

2.1. Air Quality Legislation

2.1.1 The Air Quality Standards (Wales) Regulations 2010 (as amended) set legally binding limit values for concentrations of major air pollutants in outdoor air that impact public health, including NO_2, PM_{10} and $PM_{2.5}$ (HMSO, 2010). Limit values apply at all locations, apart from where the public does not have access, where health and safety at work provisions apply and on the road carriageway. The limit values for PM_{10} and NO_2 applied from 2005 and 2010 respectively, whereas the $PM_{2.5}$ limit value applied from 2015.

2.1.2 Part IV of The Environment Act 1995 required the UK Government to prepare an Air Quality Strategy which includes standards and objectives for air quality and sets out measures which are to be taken by local authorities and the government in order to achieve those objectives. The Welsh Government has replaced the UK Air Quality Strategy (Defra, 2007) with the Clean Air Plan for Wales (Welsh Government, 2020; Welsh Government, 2024a). The plan sets out the commitments, long-term ambitions and steps that the Welsh Government will take to improve air quality. The Welsh Government has retained the air quality objectives from the UK Air Quality Strategy as part of National Air Quality Strategy for Wales.

2.1.3 The air quality standards and objectives are intended to protect human health and the environment. Standards are the concentrations of pollutants in the atmosphere, below which there is a minimum risk of health effects or ecosystem damage; they are set with regard to scientific and medical evidence. Objectives are the policy targets set by the Government, taking account of economic efficiency, practicability, technical feasibility and timescale, where the standards are expected to be achieved by a certain date.

2.1.4 Part IV of the Environment Act 1995 also describes the system of Local Air Quality Management (LAQM), which requires every local authority to carry out regular review and assessments of air quality in its area. Where an objective has not been, or is unlikely to be achieved, the local authority must declare an AQMA and prepare an action plan which sets out appropriate measures to be introduced in pursuit of the objectives.

2.1.5 The objectives for NO_2 and PM_{10}, as prescribed by the Air Quality (Wales) Regulations 2000 and the Air Quality (Amendment) (Wales) Regulations 2002 (HMSO, 2000; HMSO, 2002), are shown in **Table 1**. The objectives for PM_{10} and NO_2 were to have been achieved by 2004 and 2005 respectively and continue to apply in all future years thereafter. The $PM_{2.5}$ objective, also shown in **Table 1**, was to be achieved by 2020; however, there is no obligation for local authorities to try to meet the $PM_{2.5}$ objective, and it is not included in the Regulations.

2.1.6 The objectives for human health apply at locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective. Examples of where the objectives should apply are provided in the Local Air Quality Management Technical Guidance (Defra, 2022) issued by the Department for Environment, Food and Rural

Affairs (Defra). The annual mean NO_2 and PM_{10} objectives should apply at the building façades of residential properties, schools, hospitals, care homes etc.; they should not apply at the building façades of places of work, hotels, gardens or kerbside sites. The 24-hour mean PM_{10} objective should apply at all locations where the annual mean objective applies, as well as the gardens of residential properties and hotels. The 1-hour mean NO_2 objective should apply at all locations where the annual and 24-hour mean objectives apply, as well as at kerbside sites where the public have regular access, e.g., the pavements of busy shopping streets.

Table 1: The Objectives for NO_2, PM_{10} and $PM_{2.5}$

Pollutant	Concentration Measured As	Objective
NO_2	1-hour Mean	200 µg/m^3 not to be exceeded more than 18 times a year
	Annual Mean	40 µg/m^3
PM_{10}	24-hour Mean	50 µg/m^3 not to be exceeded more than 35 times a year
	Annual Mean	40 µg/m^3
$PM_{2.5}$	Annual Mean	25 µg/m^3

2.1.7 The Environment (Air Quality and Soundscapes) (Wales) Act 2024 received Royal Assent in February 2024. The Act established a new air quality target setting framework with a duty for Ministers to set targets for $PM_{2.5}$ and an additional pollutant. It is anticipated that a new air quality target for $PM_{2.5}$ will be set in legislation by February 2027. The Act also requires Welsh Ministers to promote awareness of air pollution, requires Welsh ministers and local authorities to consider how plans they approve promote active travel and alters the LAQM regime in Wales, requiring annual review and assessment of air quality. Guidance to support the legislative changes to LAQM will be brought into force in 2025.

2.2. Planning Policy

2.2.1 Land-use planning policy in Wales is established within the policy document Planning Policy Wales Edition 12 (PPW), which provides the strategic policy framework for the effective preparation of local planning authority development plans (Welsh Government, 2024b).

2.2.2 The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales.

2.2.3 PPW states that:

"The planning system should maximise its contribution to achieving the well-being goals, and in particular a healthier Wales, by aiming to reduce average population exposure to air and noise pollution alongside action to tackle high pollution hotspots. In doing so, it should consider the long-term effects of current and predicted levels of air and noise pollution on individuals, society and the environment and identify and

pursue any opportunities to reduce, or at least, minimise population exposure to air and noise pollution, and improve soundscapes, where it is practical and feasible to do so.

In taking forward these broad objectives the key planning policy principle is to consider the effects which proposed developments may have on air or soundscape quality and the effects which existing air or soundscape quality may have on proposed developments. Air Quality and soundscape influence choice of location and distribution of development and it will be important to consider the relationship of proposed development to existing development and its surrounding area and its potential to exacerbate or create poor air quality or inappropriate soundscapes. The agent of change principle says that a business or person responsible for introducing a change is responsible for managing that change. In practice, for example, this means a developer would have to ensure that solutions to address air quality or noise from nearby pre-existing infrastructure, businesses or venues can be found and implemented as part of ensuring development is acceptable."

2.2.4 PPW sets out what must be done:

"In proposing new development, planning authorities and developers must, therefore:

- *address any implication arising as a result of its association with, or location within, air quality management areas, noise action planning priority areas or areas where there are sensitive receptors;*
- *not create areas of poor air quality or inappropriate soundscape; and*
- *seek to incorporate measures which reduce overall exposure to air and noise pollution and create appropriate soundscapes."*

2.2.5 The PPW states:

"To assist decision making it will be important that the most appropriate level of information is provided and it may be necessary for a technical air quality and noise assessment to be undertaken by a suitably qualified and competent person on behalf of the developer."

2.2.6 PPW goes on to discuss design and mitigation:

"Good design, for example setting back buildings from roads to avoid canyon effects and using best practice in terms of acoustic design to ensure the appropriate and intended acoustic environment of completed developments should be incorporated at an early consideration in the design and planning process. Other mitigation measures must be capable of being effectively implemented for their intended purpose, and could include those related to:

- *traffic management and road safety;*
- *ensuring progress towards a shift to low or zero emissions means of road transport, such as electrical charging points;*
- *supporting low or zero emissions public transport;*
- *providing active travel infrastructure; and*
- *incorporating green infrastructure, where it can improve air quality by removing air pollution and aiding its dispersal, reduce real or perceived noise levels by absorbing and scattering noise and introducing natural sounds to soften man-*

made noise, provide areas of relative tranquillity, and reduce exposure by putting a buffer between sources of pollution and receptors."

2.2.7 PPW also states:

"Proposed development should be designed wherever possible to prevent adverse effects to amenity, health and the environment but as a minimum to limit or constrain any effects that do occur. In circumstances where impacts are unacceptable, for example where adequate mitigation is unlikely to be sufficient to safeguard local amenity in terms of air quality and the acoustic environment it will be appropriate to refuse permission."

Local Policies

2.2.8 The Monmouthshire County Council Adopted Local Development Plan includes policy EP1 - Amenity and Environmental Protection, which states (Monmouthshire County Council, 2014):

"Development, including proposals for new buildings, extensions to existing buildings and advertisements, should have regard to the privacy, amenity and health of occupiers of neighbouring properties.

Development proposals that would cause or result in an unacceptable risk /harm to local amenity, health, the character /quality of the countryside or interests of nature conservation, landscape or built heritage importance due to the following will not be permitted, unless it can be demonstrated that measures can be taken to overcome any significant risk:

- *Air pollution;*
- *Light pollution;*
- *Noise pollution;*
- *Water pollution;*
- *Contamination;*
- *Land instability;*
- *Or any identified risk to public health or safety."*

3 Methodology

3.1. Existing Conditions

3.1.1 Information on existing air quality within the study area has been collated from the following sources:

- The results of monitoring and the most recent publicly available LAQM Air Quality Progress Report published by Monmouthshire County Council (Monmouthshire County Council, 2023);
- Background pollutant concentration maps published by Defra (Defra, 2024).

3.2. Construction Impacts

3.2.1 A construction dust risk assessment has been undertaken following the methodology in the Institute of Air Quality Management (IAQM) Guidance on the Assessment of Dust from Demolition and Construction (IAQM, 2024).

3.2.2 The guidance divides activities on construction sites into four main types: demolition, earthworks, construction and trackout. The methodology is based on a sequence of steps. Step 1 screens the requirement for more detailed assessment; if there are no receptors within 250m of the site boundary, or within 50m of roads used by construction vehicles up to 250m from the site entrance, then there is no need for further assessment. Step 2 assesses the risk of dust impacts from each of the four activities, considering the scale and nature of the works (Step 2A), and the sensitivity of the area to dust impacts (Step 2B). Site-specific mitigation for each of the four activities is then determined based on a dust risk category defined at Step 2C. **Appendix A1** sets out the construction dust assessment methodology in more detail.

3.2.3 The IAQM Guidance is clear that the primary aim of the risk assessment is to identify site specific mitigation that, once adopted, will ensure that there will be no significant effect. Therefore, the assessment has been used to determine an appropriate level of mitigation for the construction phase.

3.3. Road Traffic Impacts

3.3.1 Guidance for air quality and planning officers within local authorities, and developers and consultants involved in air quality assessments, has been published by Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) in Land-Use Planning & Development Control: Planning for Air Quality (EPUK and IAQM, 2017). . The guidance sets out criteria to help establish when an air quality assessment is likely to be considered necessary.

3.3.2 For impacts of existing air quality on new development, the requirement for an assessment should be based on professional judgement, taking into account:

- the background and future baseline air quality and whether this will be likely to approach or exceed the values set by air quality objectives;
- the presence and location of Air Quality Management Areas as an indicator of local hotspots where the air quality objectives may be exceeded;

- the presence of a heavily trafficked road, with emissions that could give rise to sufficiently high concentrations of pollutants (in particular NO_2), that would cause unacceptably high exposure for users of the new development; and
- the presence of a source of odour and/or dust that may affect amenity for future occupants of the development.

3.3.3 For impacts of development on the local area, a two-stage approach is suggested, with the first stage intended to screen out small developments, and developments considered likely to have insignificant air quality effects. The full criteria are shown in **Appendix A2**. The EPUK/IAQM guidance is clear that:

"If none of the criteria are met, then there should be no requirement to carry out an air quality assessment for the impact of the development on the local area, and the impacts can be considered as having an insignificant effect."

3.3.4 A qualitative assessment of the air quality impacts associated with the development has been undertaken based on the scale of the development, the distance of the development from emissions sources and the existing air quality. The criteria in the EPUK/IAQM guidance and professional judgement have been used to screen the requirement for a full air quality assessment, with the professional experience of the consultant preparing this report set out in **Appendix A3**.

4 Baseline Conditions

4.1. LAQM Review and Assessment

4.1.1 Monmouthshire County Council has declared two AQMAs for exceedances of the annual mean NO_2 objective, one located in Usk, and the other located in Chepstow. The AQMAs are more than 18km from the application site and will not be affected by the proposed development.

4.1.2 Monmouthshire County Council has concluded that there are no exceedances of the PM_{10} objectives in the county.

4.2. Local Air Quality Monitoring

4.2.1 Monmouthshire County Council operates one automatic monitoring site in Chepstow and an NO_2 diffusion tube monitoring network. Data from the automatic monitoring site would not be representative of air quality in the study area; however, data from diffusion tube monitoring sites located in Monmouth are provided in **Table 2,** with the monitoring locations shown in **Figure 2**.

4.2.2 Annual mean NO_2 concentrations at monitoring sites located in Monmouth ranged from 12.2 to 32.5µg/m^3 between 2018 and 2022 and no exceedances of the annual mean NO_2 objective have been measured. There is a decreasing trend in annual mean NO_2 concentrations and by 2022 the measured range was 14.7 to 25.4µg/m^3 and the objective was achieved by a wide margin.

4.2.3 Concentrations measured in 2020 and 2021 were likely to have been affected by lower road traffic emissions due to travel restrictions during the COVID-19 pandemic; however, measured concentrations remained low in 2022 when there were no travel restrictions, and evidence from other monitoring sites across the UK supports this trend (Air Quality Consultants Ltd, 2022).

4.2.4 Measurements across the UK have shown that there is a risk of exceedances of the 1-hour NO_2 objective where the annual mean concentration is above 60µg/m^3; however, this value has not been exceeded at any of the diffusion tube monitoring sites.

4.3. Background Concentrations

4.3.1 Estimated background concentrations at the application site are shown in **Table 3**. The background concentrations have been derived from data in the national maps published by Defra. The background concentrations are well below the objectives.

Table 2: Measured Annual Mean NO_2 Concentrations

Site ID	Location	Site Type [a]	Annual Mean (µg/m³) [a]				
			2018	2019	2020	2021	2022
MM1	School House - Wyebridge Street	R	31.6	30.4	22.9	24.9	24.9
MM2	Flat 1 - Granville Street	R	25.7	23.5	15.6	18.7	18.6
MM3	21 St James Square	R	22.5	21.2	15.2	16.7	17.3
MM4	12A Monnow Street on St Johns Street	R	24.1	24.8	15.1	16.9	18.9
MM7	Arka, Old Dixton Road	R	22.9	21.5	14.3	17.1	18.1
MM9	1; The Shrubbery, Old Dixton Road	R	20.5	18.7	15.0	14.8	14.7
MM11	Fence of Boys School Playground	R	29.0	24.6	17.6	22.4	21.4
MM13	Pike House, New Dixton Road	R	32.5	30.0	20.6	22.3	25.4
MM15	6 Monnow Street/Fancy Fred's	R	31.8	30.7	17.4	23.3	23.1
MM16	20A Monnow Street	R	26.6	26.5	15.1	18.9	20.0
MM17	4 Agincourt Square - The Punch House	R	21.6	21.6	12.2	15.3	15.0
MM18	Monmouth School D&T Block	R	25.9	24.1	15.8	19.5	19.4
MM19	7 Ty Mawr, Monk Street	R	30.0	27.6	17.0	21.3	21.1
MM21	14 Victoria Place, Priory Street	R	32.2	29.8	15.9	22.0	21.7
Objective			**40**				

a R = Roadside.

Table 3: Estimated Annual Mean Background Concentrations in 2024 (µg/m³)

OS Grid (x,y)	NO_2	PM_{10}	$PM_{2.5}$
350500,213500	4.9	10.9	7.0
Objective	**40**	**40**	**25**

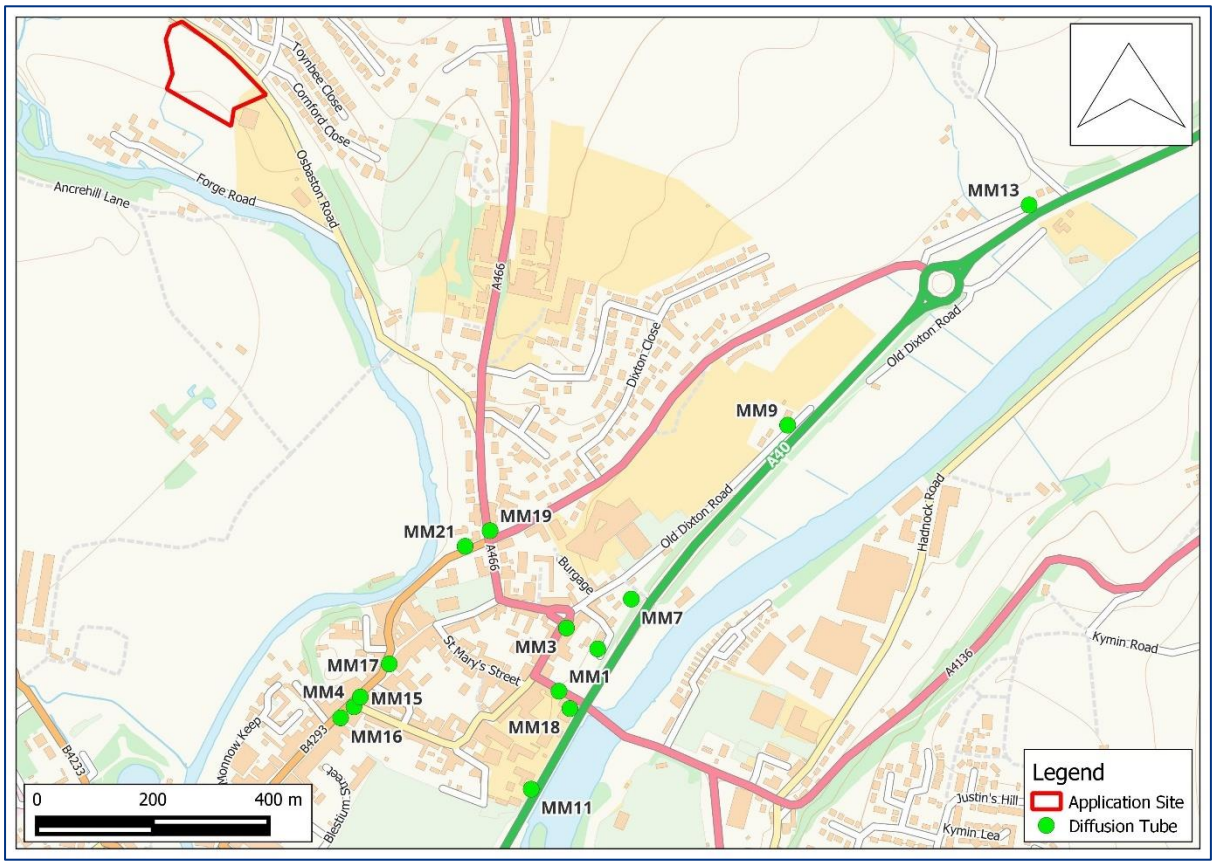

Figure 2: Air Quality Monitoring Sites
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5 Air Quality Assessment

5.1. Construction Phase

5.1.1 A series of mitigation measures will be adopted to minimise the risk of dust soiling and elevated concentrations of PM_{10} during the construction phase of the development. Impacts from construction dust may occur during demolition, earthworks and construction, as well as from track-out of dust onto the public highway, as vehicles leave the construction site.

Screening

5.1.2 There are human receptors within 250m of construction activities and further assessment of the construction phase impacts on human receptors is necessary. There are no sensitive ecological receptors within 50m of the application site boundary, and the effects of construction on ecology will not be considered further.

Risk of Dust Impacts

Potential Dust Emission Magnitude

5.1.3 No demolition will be required; therefore, the dust emissions due to demolition will not be considered further.

5.1.4 Earthworks may be required to prepare the site for construction; however, the entire site area is less than 16,000, and any earthworks will cover a much smaller area. The dust emission class for earthworks is considered to be small.

5.1.5 The proposed development involves the construction of new structures with a total volume of less than 12,000m^3; therefore, the dust emission class for construction is considered to be small.

5.1.6 The number of daily outward heavy-duty vehicle (HDV) movements from the application site during the construction phase is likely to be less than 20 and heavy vehicles will travel across less than 50m of unpaved surface; therefore, the dust emission class for trackout is considered to be small.

5.1.7 A summary of the likely dust emission magnitudes is shown in **Table 4**.

Table 4: Likely Dust Emission Magnitudes

Source	Dust Emission Magnitude
Demolition	n/a
Earthworks	Small
Construction	Small
Trackout	Small

Sensitivity of the Area

5.1.8 The sensitivity of the area depends on the specific sensitivities of local receptors, the proximity and number of receptors, local PM_{10} background concentrations and other site-specific factors, e.g. natural screening by trees.

Sensitivity of the Area to Dust Soiling

5.1.9 The nearby residential properties are considered to be 'high' sensitivity receptors to dust soiling. There could be between 10-100 high sensitivity residential dust receptors within 20m of dust generating activities during the construction works and from trackout; therefore, the area is considered to be of high sensitivity to dust soiling during the construction works.

Sensitivity of the Area to the Health Effects of PM_{10}

5.1.10 The nearby residential properties and Osbaston Church of Wales School are considered to be 'high' sensitivity receptors to the health effects of PM_{10}. The application site and surrounding area are likely to be exposed to annual mean PM_{10} concentrations close to the background level, i.e., around 10.9µg/m^3. Therefore, the area is considered to be of low sensitivity to the health effects of PM_{10} during on-site works and from trackout. A summary of the sensitivity of the area to the effects of the construction works is shown in **Table 5**.

Table 5: Summary of the Area Sensitivity

Potential Effect	Sensitivity of the Area	
	Construction	Trackout
Dust Soiling	High	High
Health	Low	Low

Risk of Impact and Significance

5.1.11 The dust emission magnitudes in **Table 4** have been combined with the area sensitivities in **Table 5** and a risk category has been assigned to each construction activity using the matrix in **Appendix A1.** The resultant risk categories, shown in **Table 6**, have then been used to determine the appropriate level of mitigation necessary for a residual effect that is likely to be 'not significant'.

Table 6: Summary of the Risk of Impacts Without Mitigation

Construction Activity	Dust Soiling	Health
Demolition	n/a	n/a
Earthworks	Low	Negligible
Construction	Low	Negligible
Trackout	Low	Negligible

5.2. Operational Phase

Impact of the Development

5.2.1 The proposed development will replace the Dixton Surgery in Monmouth and will provide additional services for use by other practices. The net change in traffic on local roads will be lower than the 500 AADT screening threshold for a detailed air quality assessment for areas not within, or affecting, an AQMA. Therefore, with regard to the IAQM screening criteria in **Appendix A2**, detailed assessment of the air quality impacts of the development on the surrounding area should not be required and the air quality effects are considered to be insignificant.

Impact on the Development

5.2.2 The closest road traffic emissions source to the application site is Osbaston Road at the northern boundary of the application site, which is a lightly trafficked local road. Annual mean NO_2 concentrations at the application site would be significantly lower than those measured at the roadside monitoring sites located in Monmouth, which are located close to roads with a much heavier flow of traffic than Osbaston Road. Annual mean NO_2 concentrations at the application site would likely be close to the background level of 4.9µgNO_2/m^3, well below the 40µg/m^3 objective. Air quality monitoring undertaken by Monmouthshire County Council shows that there have been no exceedances of the annual mean objective for NO_2 in Monmouth.

5.2.3 Monmouth County Council has concluded that concentrations of PM_{10} do not exceed the objectives anywhere in the county, and annual mean concentrations at the application site are likely to be close to the background level of 10.9µg/m^3, well below the 40µg/m^3 objective.

5.2.4 Concentrations of $PM_{2.5}$ at the application site will likely be close to the background level of 7.0µg/m^3, which is well below the 25µg/m^3 objective.

5.2.5 Given the distance of new receptors at the proposed development from significant road traffic emissions sources, air quality at the application site is likely to be close to background levels and pollutant concentrations at the application site would be well below the air quality objectives. Therefore, air quality at the proposed development would be acceptable and the impact of existing air quality on the proposed development would be insignificant.

6 Mitigation

6.1. Construction Phase

6.1.1 The application site has been identified as a low risk site for dust soiling and a negligible risk site for health effects during the construction phase, as set out in **Table 6**. The dust risk category for each construction activity has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The mitigation measures, taken from the IAQM guidance, are described in **Appendix A4**.

6.1.2 The mitigation measures should be written into a dust management plan (DMP), which should be approved by the local planning authority prior to commencement of work on site.

6.2. Operational Phase

6.2.1 The screening assessment has shown that the proposed development would not have a significant effect on local air quality and that air quality at the application site would be suitable for use as a health centre.

6.2.2 Measures to reduce pollutant emissions from road traffic are being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation; therefore, it is not considered appropriate to propose further mitigation measures for this scheme.

7 Conclusions

7.1.1 The air quality impacts due to the construction and operation of the proposed development have been assessed.

7.1.2 The construction phase will have the potential to create dust. It will therefore be necessary to implement mitigation measures to minimise dust emission. With these measures in place, it is expected that any residual effects will be insignificant.

7.1.3 The development will not increase traffic above the level of the IAQM/EPUK screening criteria during the operational phase; therefore, detailed air quality assessment should not be necessary, and the development will have an insignificant effect on local air quality due to vehicle emissions.

7.1.4 Pollutant concentrations at the application site are well below the air quality objectives and air quality will be acceptable for the development of a health centre.

7.1.5 The air quality effects of the proposed development have been assessed and found to be insignificant. There should be no constraints to the development of the site for health centre use, with regard to air quality, as the development is consistent with the relevant parts of:

- Planning Policy Wales Edition 12;
- Policy EP1 of the Monmouthshire County Council Adopted Local Development Plan.

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9 Appendices

A1 Construction Dust Assessment Methodology

A1.1. Introduction

A1.1.1 The IAQM guidance divides activities on construction sites into four types to reflect their different potential impacts:

- demolition;
- earthworks;
- construction; and
- trackout.

A1.1.2 A series of steps then consider the potential impact due to:

- the risk of health effects from an increase in exposure to PM_{10} and $PM_{2.5}$;
- annoyance due to the deposition of dust;
- harm to the natural environment.

A1.2. Step 1: Screen the Need for a Detailed Assessment

A2.1.1 An assessment is required where there is a human receptor within 250m of the site boundary, and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s), or where there is an ecological receptor within 50m of the site boundary, and/or within 50m of the route(s) used by construction vehicles on the public highway, up to 250m from the site entrance(s).

A2.1.2 Where the need for a more detailed assessment is screened out, it can be concluded that the level of risk is negligible, and any effects will be not significant.

A1.3. Step 2: Assess the Risk of Dust Impacts

A3.1.1 A site is allocated to a risk category based on two factors:

- the scale and nature of the works, which determines the potential dust emissions magnitude (Step 2A); and
- the sensitivity of the area to dust impacts (Step 2B).

A3.1.2 These two factors are combined at Step 2C to determine the risk of dust impacts from each type of construction activity, with no mitigation applied.

Step 2A: Potential Dust Emissions Magnitude

A3.1.3 The dust emission magnitude is classified as small, medium or large. Examples of how the potential dust emission magnitude for each activity can be defined are shown in **Table A1**.

Table A1: Examples of How the Dust Emission Magnitude can be Defined

Class	Example
Demolition	
Large	Total building volume >75,000 m^3, potentially dusty construction material (e.g. concrete), on-site crushing and screening, demolition activities >12 m above ground level.
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material, demolition activities 6-12 m above ground level.
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber), demolition activities <6 m above ground, demolition during wetter months.
Earthworks	
Large	Total site area >110,000 m^2, potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size), >10 heavy earth moving vehicles active at any one time, formation of bunds >6 m in height.
Medium	Total site area 18,000 m^2 – 110,000 m^2, moderately dusty soil type (e.g. silt), 5-10 heavy earth moving vehicles active at any one time, formation of bunds 3m - 6m in height;
Small	Total site area <18,000 m^2, soil type with large grain size (e.g. sand), <5 heavy earth moving vehicles active at any one time, formation of bunds <3 m in height.
Construction	
Large	Total building volume >75,000 m^3, piling, on site concrete batching; sandblasting.
Medium	Total building volume 12,000 m^3 – 75,000 m^3, potentially dusty construction material (e.g. concrete), on site concrete batching.
Small	Total building volume <12,000 m^3, construction material with low potential for dust release (e.g. metal cladding or timber).
Trackout [a]	
Large	>50 HDV (>3.5t) outward movements in any one day, potentially dusty surface material (e.g. high clay content), unpaved road length >100 m.
Medium	20-50 HDV (>3.5t) outward movements in any one day, moderately dusty surface material (e.g. high clay content), unpaved road length 50 m – 100 m.
Small	<20 HDV (>3.5t) outward movements in any one day, surface material with low potential for dust release, unpaved road length <50 m.

a These numbers are for vehicles that leave the site after moving over unpaved ground.

Step 2B: Define the Sensitivity of the Area

A3.1.4 The sensitivity of the area takes account of:

- the specific sensitivities of receptors in the area;
- the proximity and number of those receptors;
- in the case of PM_{10}, the local background concentrations; and
- site-specific factors, such as whether there are natural shelters, such as trees, to reduce the risk of wind-blown dust.

A3.1.5 The specific sensitivities of different types of receptor to dust soiling and PM_{10} are shown in **Table A2**, **Table A3** and **Table A4**. Professional judgement should be used to identify where on the spectrum of sensitivity a receptor lies, taking account of specific circumstances, i.e., the first occupants of residential units on a phased development may be expected to be less sensitive to dust soiling.

A3.1.6 The sensitivity of the area is then determined from the specific sensitivities of the receptors using the matrices set out in **Table A5**, **Table A6** and **Table A7**. Professional judgement should be used to determine the final sensitivity of the area, taking account of:

- any history of dust generating activities in the area:
- the likelihood of concurrent dust generating activity on nearby sites;
- any pre-existing screening between source and receptors;
- any conclusions drawn from analysing local meteorological data which accurately represents the area; and if relevant, the season during which the works will take place;
- any conclusions drawn from local topography;
- duration of the potential impact, as a receptor may become more sensitive over time; and
- any other known specific receptor sensitivities.

Step 2C: Define the Risk of Impacts

A3.1.7 The dust emission magnitude determined at Step 2A is combined with the sensitivity of the area determined at Step 2B to determine the risk of impacts with no mitigation applied. The level of risk for each activity is determined using the matrix in Table A8.

A1.4. Step 3: Determine Site Specific Mitigation

A4.1.1 The dust risk category determined at Step 2C has been used, along with the professional judgement of the consultant, to determine the appropriate level of mitigation at the site. The highly recommended and desirable mitigation measures set out in the IAQM guidance form the basis of the mitigation.

A1.5. Step 4: Determine Significant Effects

A5.1.1 The IAQM guidance is clear that, with appropriate mitigation in place, the residual effect will normally be 'not significant'.

Table A2: Sensitivities of People to Dust Soiling

Class	Principles	Examples
High	Users can reasonably expect enjoyment of a high level of amenity; or the appearance, aesthetics or value of their property would be diminished by soiling; and the people or property would reasonably be expected to be present continuously, or at least regularly for extended periods, as part of the normal pattern of use of the land.	Dwellings, museum and other culturally important collections, medium and long term car parks and car showrooms.
Medium	Users would expect to enjoy a reasonable level of amenity, but would not reasonably expect to enjoy the same level of amenity as in their home; or the appearance, aesthetics or value of their property could be diminished by soiling; or the people or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land.	Parks and places of work.
Low	The enjoyment of amenity would not reasonably be expected; or property would not reasonably be expected to be diminished in appearance, aesthetics or value by soiling; or there is transient exposure, where the people or property would reasonably be expected to be present only for limited periods of time as part of the normal pattern of use of the land.	Playing fields, farmland (unless commercially-sensitive horticultural), footpaths, short term car parks and roads.

Table A3: Sensitivities of People to Health Effects of PM_{10}

Class	Principles	Examples
High	Locations where members of the public are exposed over a time period relevant to the air quality objective for PM_{10} (in the case of the 24-hour objectives, a relevant location would be one where individuals may be exposed for eight hours or more in a day).	Residential properties, hospitals, schools and residential care homes.
Medium	Locations where the people exposed are workers, and where individuals may be exposed for eight hours or more in a day.	Office and shop workers, but will generally not include workers occupationally exposed to PM_{10}
Low	Locations where human exposure is transient.	Public footpaths, playing fields, parks and shopping streets.

Table A4: Sensitivities of Receptors to Ecological Effects

Class	Principles	Examples
High	Locations with an international or national designation and the designated features may be affected by dust soiling; or locations where there is a community of a particularly dust sensitive species such as vascular species included in the Red Data List For Great.	Special Areas of Conservation (SAC) designated for acid heathlands or a local site designated for lichens adjacent to the demolition of a large site containing concrete (alkali) buildings.
Medium	Locations where there is a particularly important plant species, where its dust sensitivity is uncertain or unknown; or locations with a national designation where the features may be affected by dust deposition.	Sites of Special Scientific Interest (SSSI) with dust sensitive features.
Low	Locations with a local designation where the features may be affected by dust deposition.	Local Nature Reserves with dust sensitive features.

Table A5: Sensitivity of the Area to Dust Soiling Effects on People and Property [a]

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		<20	<50	<100	<250
High	>100	High	High	Medium	Low
	10-100	High	Medium	Low	Low
	1-10	Medium	Low	Low	Low
Medium	>1	Medium	Low	Low	Low
Low	>1	Low	Low	Low	Low

a The impact declines with distance from the site, and it is only necessary to consider trackout impacts up to 50m from the edge or the road.

Table A6: Sensitivity of the Area to Human Health Effects

Receptor Sensitivity	Annual Mean PM_{10}	Number of Receptors	Distance from the Source (m)			
			<20	<50	<100	<250
High	>32 µg/m^3	>100	High	High	High	Medium
		10-100	High	High	Medium	Low
		1-10	High	Medium	Low	Low
	28-32 µg/m^3	>100	High	High	Medium	Low
		10-100	High	Medium	Low	Low
		1-10	High	Medium	Low	Low
	24-28 µg/m^3	>100	High	Medium	Low	Low
		10-100	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	<24 µg/m^3	>100	Medium	Low	Low	Low
		10-100	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Medium	>32 µg/m^3	>10	High	Medium	Low	Low
		1-10	Medium	Low	Low	Low
	28-32 µg/m^3	>10	Medium	Low	Low	Low
		1-10	Low	Low	Low	Low
	<28 µg/m^3	>10	Low	Low	Low	Low
		1-10	Low	Low	Low	Low
Low	-	≥1	Low	Low	Low	Low

Table A7: Sensitivity of the Area to Ecological Effects

Receptor Sensitivity	Distance from the Source (m)	
	<20	<50
High	High	Medium
Medium	Medium	Low
Low	Low	Low

Table A8: Defining the Risk of Dust Impacts

Sensitivity of the Area	Dust Emission Magnitude		
	Large	Medium	Small
Demolition			
High	High Risk	Medium Risk	Medium Risk
Medium	High Risk	Medium Risk	Low Risk
Low	Medium Risk	Low Risk	Negligible
Earthworks			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Construction			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible
Trackout			
High	High Risk	Medium Risk	Low Risk
Medium	Medium Risk	Medium Risk	Low Risk
Low	Low Risk	Low Risk	Negligible

A2 IAQM Criteria Used to Establish when an Air Quality Assessment is Likely to be Necessary

A1.2.1 Stage 1 (criteria to proceed to Stage 2).

A. If any of the following apply:

- 10 or more residential units or a site area of more than 0.5ha;
- more than 1,000 m^2 of floor space for all other uses or a site area greater than 1ha

B. Coupled with any of the following:

- the development has more than 10 parking spaces
- the development will have a centralised energy facility or other centralised combustion process

Note: Consideration should still be given to the potential impacts of neighbouring sources on the site, even if an assessment of impacts of the development on the surrounding area is screened out.

A1.2.2 The Stage 2 criteria are shown in **Table A9**.

Table A9: Indicative Criteria for Requiring an Air Quality Assessment

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment [a]
1. Cause a significant change in Light Duty Vehicle (LDV) traffic flows on local roads with relevant receptors. (LDV = cars and small vans <3.5t gross vehicle weight)	A change of LDV flows of: - more than 100 AADT within or adjacent to an AQMA; - more than 500 AADT elsewhere.
2. Cause a significant change in Heavy Duty Vehicle (HDV) flows on local roads with relevant receptors. (HDV = goods vehicles + buses >3.5t gross vehicle weight)	A change of HDV flows of: - more than 25 AADT within or adjacent to an AQMA; - more than 100 AADT elsewhere.
3. Realign roads, i.e. changing the proximity of receptors to traffic lanes.	Where the change is 5m or more and the road is within an AQMA.
4. Introduce a new junction or remove an existing junction near to relevant receptors.	Applies to junctions that cause traffic to significantly change vehicle accelerate/decelerate, e.g. traffic lights, or roundabouts.
5. Introduce or change a bus station.	Where bus flows will change by: - more than 25 AADT within or adjacent to an AQMA; - more than 100 AADT elsewhere.

The development will:	Indicative Criteria to Proceed to an Air Quality Assessment [a]
6. Have an underground car park with extraction system.	The ventilation extract for the car park will be within 20 m of a relevant receptor; coupled with the car park having more than 100 movements per day (total in and out).
7. Have one or more substantial combustion processes	Where the combustion unit is: - any centralised plant using bio fuel; - any combustion plant with single or combined thermal input>300kW; - a standby emergency generator associated with a centralised energy centre (if likely to be tested/used >18 hours a year).
8. Have a combustion process of any size	Where the pollutants are exhausted from a vent or stack in a location and at a height that may give rise to impacts at receptors through insufficient dispersion. This criterion is intended to address those situations where a new development may be close to other buildings that could be residential and/or which could adversely affect the plume's dispersion by way of their size and/or height.

a AADT = Annual Average Daily Traffic

A3 Professional Experience

Bob Thomas, BSc (Hons) PgDip MSc MIEnvSc MIAQM CSci

Bob Thomas is a Director at AQA, with over 21 years working in the sciences and 17 years' experience in the field of air quality management and assessment. He has carried out air quality assessments for a wide range of developments, including residential, commercial, industrial, minerals and waste developments. He has been responsible for air quality projects that include ambient air quality monitoring of nitrogen dioxide, dust and PM_{10}, the assessment of nuisance odours and dust, and the preparation of Review and Assessment reports for local authorities. He has extensive dispersion modelling experience for road traffic, energy centre and industrial sources, and has completed many stand-alone reports and chapters for inclusion within an Environmental Statement. Bob has worked with a variety of clients to provide expert air quality services and advice, including local authorities, planners, developers, architects and process operators, and has provided expert witness services at public inquiry. He is a Chartered Scientist, a Member of the Institute of Air Quality Management and a Member of the Institution of Environmental Sciences.

A full CV for Bob Thomas is available at http://aqassessments.co.uk/about

A4 Construction Mitigation

A4.1.1 The following is a set of measures that should be incorporated into the specification for the works.

A4.2. Communications

- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environmental manager/engineer or the site manager; and
- display the head or regional office contact information.

A4.3. Dust Management Plan

- Develop and implement a Dust Management Plan (DMP) approved by the Local Authority which documents the mitigation measures to be applied, and the procedures for their implementation and management.

A4.4. Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- make the complaints log available to the local authority when asked; and
- record any exceptional incidents that cause dust and/or air emissions, either on- or off- site, and the action taken to resolve the situation in the log book.

A4.5. Monitoring

- Undertake daily on-site and off-site inspections where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the Local Authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100 m of the site boundary, with cleaning to be provided if necessary;
- carry out regular site inspections, record inspection results, and make an inspection log available to the Local Authority when asked; and
- increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust area being carried out and during prolonged dry or windy conditions.

A4.6. Preparing and Maintaining the Site

- Plan the site layout so that machinery and dust-causing activities are located away from receptors, as far as is possible;
- erect solid screens or barriers around dusty activities or the site boundary that are as at least as high as any stockpiles on site;
- fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- avoid site runoff of water or mud;
- keep site fencing, barriers and scaffolding clean using wet methods;

- remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below; and
- cover, seed, or fence stockpiles to prevent wind whipping.

A4.7. Operating Vehicle/Machinery and Sustainable Travel

- ensure all vehicles switch off their engines when stationary – no idling vehicles; and
- avoid the use of diesel- or petrol-powered generators and use mains electricity or battery-powered equipment where practicable.

A4.8. Operations

- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate;
- use enclosed chutes, conveyors and covered skips;
- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate; and
- ensure equipment is readily available on site to clean any dry spillages, and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

A4.9. Waste Management

- Avoid bonfires and burning of waste materials.

A4.10. Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces), if possible; and
- ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

A4.11. Measures Specific to Trackout

- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use;
- avoid dry sweeping of large areas;
- ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport;
- implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).