Air Quality Statement: Mendalgief Road, Newport

Client[1]**:** LNT Construction Limited

Reference: APS_P1232A_A1

Date: 14 April 2025

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1. Introduction

1.1. Kalaco (formerly Air Pollution Services) has been commissioned by LNT Construction Limited (the 'Client') to assess the air quality impacts associated with the proposed development at land adjacent to Mendalgief Road, Newport (herein the 'proposed development') in the administrative area of Newport City Council (NCC).

1.2. A detailed air quality assessment for the site, in which the proposed development is located, was undertaken by Arup in 2015 (Arup, 2015). The assessment, for a residential led development including a school covering an larger area than the current application, concluded that there would be no significant impacts. The findings of the 2015 modelling exercise are utilised in this statement, where appropriate.

1.3. This air quality statement consists of an overview of the proposed development (Section 2), review of baseline air quality conditions (Section 3), site suitability assessment (Section 4), mitigation measures (Section 5) and conclusions (Section 6). A glossary of terms and references are set out in Section 7 and Section 8, respectively.

1.4. The methodology used in this assessment has been discussed and agreed with Steve Manning, Senior Scientific Officer at NCC, via email on 26 March 2025.

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1.5. It is important that air quality assessments are carried out by suitably qualified experts with professional accreditations, such as being a full member of the Institute of Air Quality Management (IAQM). Further details of the assessment authors are set out in Section 9.

2. The Proposed Development

2.1. The description of the proposed development is as follows:

"Erection of a 66-bedroom care home (Use Class C2) for the elderly with associated access, parking, landscaping and ancillary buildings."

2.2. The location and the site plan of the proposed development are shown in Figure 1 and Figure 2.

2.3. The proposed development will not include any on-site combustion plant. The traffic generation for the proposed development is unknown. However, Pell Frischmann (2025) has produced a transport statement for a development of the same land use and size, which suggests that the traffic generation will not exceed the screening criteria set out in the Environmental Protection UK (EPUK) and IAQM Guidance (2017). Thus, further consideration and assessment of impacts on the local area is not required.

2.4. The proposed development is anticipated to be operational in 2026 at the earliest, and this has been used as the assessment year.

Figure 1: Site Location

Figure notes: Imagery © 2025 Google, Map data © 2025.

Figure 2: Site Plan

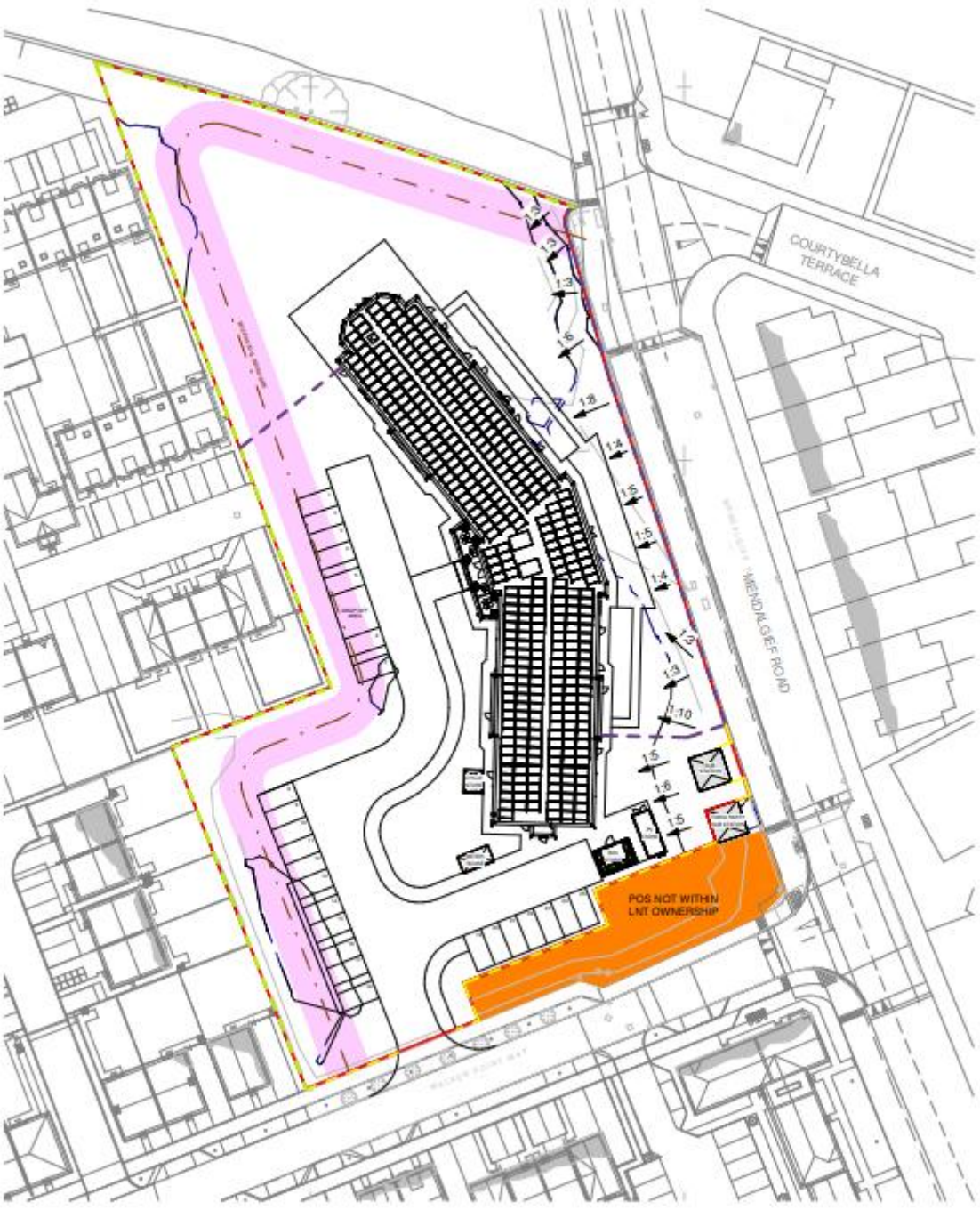

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Figure notes: Drawing provided by LNT Construction Ltd

Design Measures

2.5. The EPUK and IAQM guidance (2017) states that proposed developments should incorporate good design and best practice measures to ensure any impacts are minimised as far as practicable, even where the pollutant concentrations are predicted below the air quality objectives (AQOs)/ limit values (LVs). The proposed development includes the following good design and best practice measures:

- solar photovoltaic panels will be installed on the roof of the proposed development, supporting the building's energy usage;

- the proposed development will not include a centralised energy plant for provision of power, hot water or heating. These services will be provided electrically using ground source heat pumps, helping to minimise local air emissions;
- the road-facing façade of the proposed development is set back by approximately 10 m from the road;
- green infrastructure will be incorporated at the proposed development to form a barrier to air pollution from road traffic;
- the proposed development will include six electric vehicle charging points. This will encourage the use of low-emission vehicles, and help minimise local emissions;
- the proposed development will provide cycle parking spaces to reduce reliance on car use by care home staff and visitors; and
- the proposed development is located approximately 250 m from a bus stop with a bus route to Newport, The Duffryn and Peterstone Wentlooge. This enables staff and visitors to easily access the proposed development via public transport.

3. Baseline Conditions

Air Quality Zones

3.1. The proposed development is not located within any air quality management area (AQMA) declared by NCC. The closest AQMA, declared for exceedances of the annual mean nitrogen dioxide (NO_2) AQO, is located approximately 650 m northeast of the proposed development and covers the area surrounding George Street. The location of the AQMA is shown in Figure 3.

Pollutant Concentrations

3.2. The baseline concentrations of pollutants are considered in relation to the AQOs, LVs and the World Health Organization (WHO) air quality guidelines (AQG) and interim targets (ITs).

Monitoring Surveys

Local Authority Monitoring

3.3. NCC measures NO_2 concentrations at many locations and particulate matter (PM) concentrations at one location. National government measures concentrations of NO_2 and PM at monitoring sites across the UK as part of the Automatic Urban and Rural Network; however, there are no national government monitoring sites in the vicinity of the application site.

3.4. The locations of monitoring sites within 1 km of the application site are shown in Figure 3.

3.5. The NO_2 monitoring sites located within the George Street AQMA provide useful information to understand the air quality in the local area. Monitoring site NCC91 is located in a more built-up area, alongside a road with lower traffic flows than Mendalgief Road. Monitoring site NCC42 is located less than 100 m from the proposed development. Although it is in close proximity to the application site, it is located next to a junction. Thus, none of these monitoring sites are considered representative of the conditions at the proposed development. They, however, provide useful information to understand the conditions in the local area.

3.6. There is not PM monitoring near the proposed development.

Figure 3: Location of AQMA and Monitoring Sites in Relation to Proposed Development

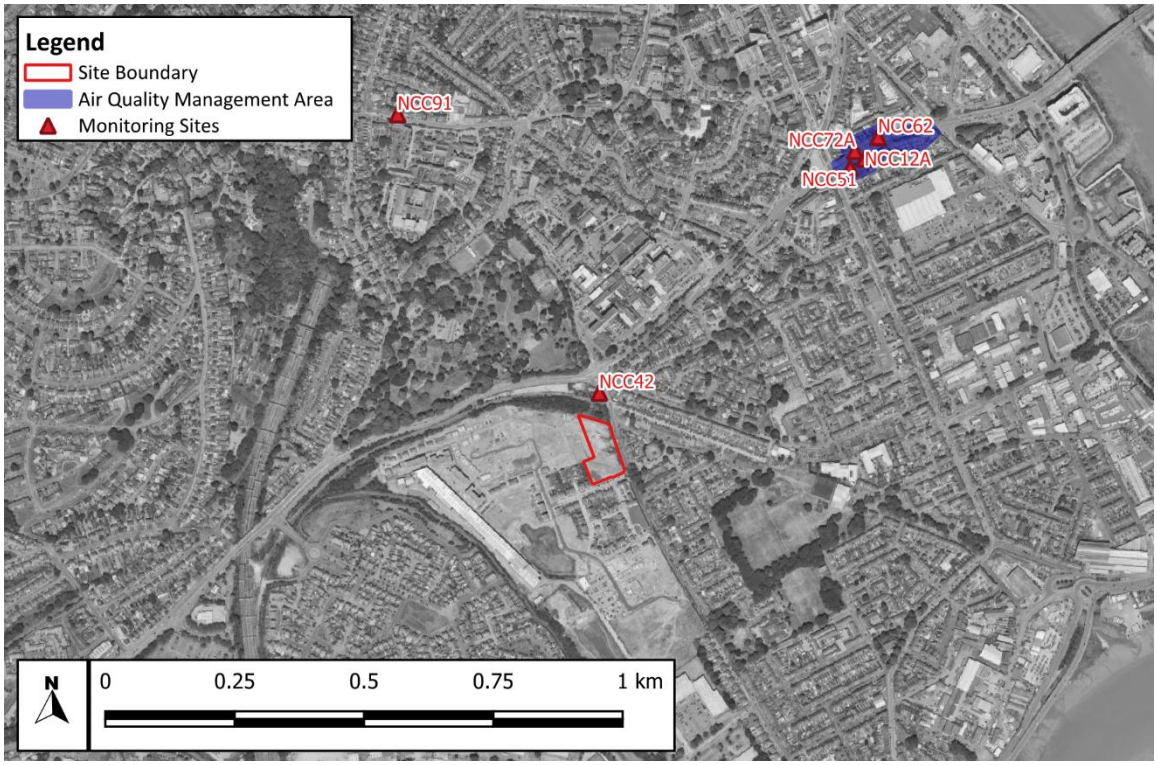

Figure notes: Imagery © 2025 Google, Map data © 2025.

3.7. Table 1 shows that NCC did not measure any exceedances of the annual mean NO_2 AQO at any of its monitoring sites within its administrative area in 2023 – the latest year with available data (Newport City Council, 2024). Concentrations at monitoring site NCC42, the closest to the proposed development, were below the WHO IT 2 of 30 µg/m^3, which is consistent with measurements across the other monitoring sites with the exception of NCC91. Concentrations at this monitoring location were below WHO IT 3 of 20 µg/m^3 and are likely to be more representative of concentrations across much of the proposed development.

Defra Predicted Concentrations

Background Predicted Concentrations

3.1. The national pollution maps, published by Defra (2024), provide background concentrations for the whole of the country on a 1x1 km^2 grid for each year from 2021 until 2040. Concentrations for 2026 have been extracted for the grid cells that covers the proposed development and are shown in Table 2.

3.2. No exceedances are predicted for the earliest likely operational year of the proposed development, with the concentrations well below the respective AQOs.

Table 1: Measured NO_2 Annual Mean Concentrations (µg/m^3) [a]

Monitoring Site – Site Name (Type)	Distance from Road (m)	Network [b]	2017	2018	2019	2020 [e]	2021 [e]	2022	2023
Diffusion Tube Monitoring - Annual Mean Concentrations (µg/m³)									
NCC12A – 73 George Street (Façade)	2.7	A	37.8	35.1	36.4	28.1	29.1	30.2	26.8
NCC42 – 69 Cardiff Road (Bellevue Stores)	6.4	A	25.7	25.4	24.0	18.1	24.7	25.4	22.9
NCC51 – 81 George Street (Façade)	2.7	A	**40.7**	37.5	**41.1**	32.8	31.9	32.9	28.6
NCC62 – 17 George Street (Façade)	1.3	A	33.8	32.3	35.4	25.5	28.0	33.6	26.2
NCC72A – 6A George Street (Façade)	3.9	A	32.9	33.5	33.6	27.5	28.3	28.8	26.0
NCC91 – 166 Stow Hill (Façade)	6.4	A	-	-	-	-	-	-	14.6
AQO			**40**						
LV [c]			**40**						
WHO AQG Level (IT 1, IT 2, IT 3) [d]			**10 (40, 30, 20)**						

Table notes:

a. Concentrations above the AQO are presented in bold. These do not necessary represent relevant exposure nor exceedances of the AQO.

b. A - Local Authority network, B – AURN.

c. Reporting of LV exceedances is only carried out based on approved reference monitoring and at relevant reporting locations. Therefore, while the value is included, the monitoring presented is unlikely to comply with the requirements for LV reporting and assessment.

d. Not required to be achieved within UK legislation.

e. Air quality monitoring carried out includes periods of national travel restrictions due to the COVID-19 pandemic; measured concentrations are therefore not likely to be representative of typical conditions.

Table 2: Defra Background Predicted Pollutant Concentrations at the Proposed Development (µg/m^3)

Year	NO_2	PM_{10}	$PM_{2.5}$
2026	10.5	12.8	7.7
AQO	**40**	**40**	**25**
LV	**40**	**40**	**20**
WHO AQG Level (IT 1, IT 2, IT 3) [a]	**10 (40, 30, 20)**	**15 (70, 50, 30, 20)**	**5 (35, 25, 15, 10)**

Table notes:

a. Not required to be achieved within UK legislation.

Roadside Predicted Concentrations

3.4. Defra has also predicted roadside concentrations for the main roads in the UK (Defra, 2023) for the years 2017 to 2030 as part of Defra's commitment to report exceedances of the LVs. There are no predictions for roads within 200 m of the application site.

Modelled Concentrations

3.5. The previous air quality assessment (Arup, 2015) predicted NO_2 and PM_{10} concentrations for 2021, when the previous proposed was anticipated to be fully operational. The modelled locations are shown in Figure 4, and the predicted concentrations are presented in Table 3.

Figure 4: Location of Modelled Receptors

Figure notes: Taken from 'Former Whiteheads Steelworks Site – Air Quality Assessment' (doc ref: 234989-00) (Arup, 2015).

3.6. The 2015 modelling suggests that the future users of the proposed development would not be exposed to concentrations above the AQOs, and that the proposed development would not lead to exceedances of the AQOs in the local area.

3.7. The highest concentration was predicted at receptor 4, which was positioned next to a junction between Mendalgief Road, Capel Cres and Cardiff Road. The concentrations at the remaining receptors were broadly similar and well below the AQOs of 40 µg/m^3. With respect to WHO ITs, it was predicted that the concentrations at the proposed development in 2021 would be below WHO IT 2 (30 µg/m^3) for NO_2, and WHO IT 4 (20 µg/m^3) for PM_{10}.

3.8. NO_2 concentrations are generally falling and by 2026 the background concentrations are estimated by Defra to be less than half those for 2014 used by Arup in their assessment. Adjusting the Arup estimated concentration by the reductions in the background concentrations suggests that all the Arup modelled on-site locations would achieve WHO IT 3 (20 µg/m^3).

Table 3: Modelled Pollutant Concentrations at the Proposed Development (µg/m^3)

Receptor	NO_2		PM_{10}	
	2014 Baseline	2021 With Development	2014 Baseline	2021 With Development
1 (On-site)	23.6	23.4	16.1	16.2
2 (On-site)	27.2	27.3	16.0	16.0
3 (On-site)	26.8	26.9	15.9	15.9
4 (Off-site)	32.3	32.7	16.5	16.6
5 (Off-site)	28.0	28.0	16.1	16.1
6 (On-site)	22.8	23.1	15.9	16.0
7 (On-site)	23.4	23.8	16.1	16.1
8 (Off-site)	24.2	24.6	16.2	16.3
9 (On-site)	23.4	23.7	16.1	16.1
10 (Off-site)	24.6	25.0	17.0	17.1
11 (Off-site)	24.5	24.9	17.0	17.0
12 (Off-site)	24.8	25.2	17.0	17.1
13 (Off-site)	25.3	25.7	17.1	17.1
AQO	**40**		**40**	
LV	**40**		**40**	
WHO AQG Level (IT 1, IT 2, IT 3) [a]	**10 (40, 30, 20)**		**15 (70, 50, 30, 20)**	

Table notes: Taken from 'Former Whiteheads Steelworks Site – Air Quality Assessment' (doc ref: 234989-00) (Arup, 2015).
a. Not required to be achieved within UK legislation.

4. Site Suitability Assessment

4.1. The proposed development consists of a care home; thus, introducing vulnerable human health exposure to the application site. Future occupiers of the proposed development may be affected by both short-term and long-term exposure to air pollutants.

4.2. The main air quality concern regarding the suitability of the application site for future occupants is the combined effects of background pollutant concentrations and the contribution from local roads, including Mendalgief Road, and a nearby identified industrial combustion source.

4.3. The baseline section of this statement (Section 3) has considered the concentrations at the proposed Development using local 2023 monitoring data, Defra predicted background concentrations for 2026, and modelled concentrations from the 2015 air quality assessment (Arup, 2015).

4.4. The Defra predicted background concentrations of all pollutants are below the AQOs and LVs in 2026. In 2023, the latest available year of measured data, annual mean concentrations of NO_2 in the vicinity of the proposed development did not record any exceedances of the AQO. The 2021 predicted concentrations of NO_2 and PM_{10} from the 2015 air quality assessment, did not exceed the annual mean AQOs at any of the receptors at the application site.

4.5. The 2015 air quality assessment also considered emissions from an assessment conducted for a nearby industrial source operated by CoilColor Ltd. The findings showed the effects of the

industrial source to be negligible; and thus, the impact on the concentrations within the vicinity of the wider site were not significant.

4.6. The future occupants of the proposed development are unlikely to be exposed to exceedances of the annual mean and short-term AQOs and LVs in 2026, when the proposed development is likely to be first operational.

4.7. With respect to the WHO air quality guidelines (AQGs), the concentrations at the proposed development are anticipated to be:

- Below the WHO IT 3 of 30 µg/m^3 for NO_2;
- Below the WHO IT 4 of 20 µg/m^3 for PM_{10}; and
- Below the WHO IT 4 of 10 µg/m^3 for $PM_{2.5}$.

4.8. The AQGs are not legally binding standards; however, they should be used to inform legislation and policy. Ultimately, the goal of the AQGs is to help reduce the health burden resulting from exposure to air pollution. Air pollution increases morbidity and mortality from cardiovascular and respiratory disease, and from lung cancer, and there is increasing evidence of effects on all other human organ systems.

4.9. As demonstrated in the review of baseline air quality conditions, the concentrations of NO_2 and PM_{10} have been reducing since the 2015 air quality assessment was conducted; they are expected to decline further into the future as Wales moves towards net zero emissions.

4.10. Overall, the application site is considered to be suitable for a care home and the air quality impacts of local emissions sources on the proposed development in 2026 will be 'not significant' in terms of compliance with AQOs and LVs.

5. Mitigation Measures

5.1. NCC has published Development Management Air Quality Supplementary Planning Guidance (SPG) (2018) which requires new developments to consider mitigation measures at early stages of the design process, and during construction and operation, to prevent degradation of air quality and exposure to poor air quality at early stages of the design.

5.2. In the latest Air Quality Action Plan 2024 - 2029 (AQAP) (2024), NCC has also stated the aim to encourage new developments to incorporate measures which lead to emission reductions. The proposed development will incorporate design-based features, as set out in paragraph 2.5, ensuring that the development does not contribute to the deterioration of local air quality.

5.3. The measures designed into the proposed development are considered sufficient. If further mitigation is deemed necessary, the following mitigation measures could be implemented:

- Incentives to encourage staff and visitors to use public transport;
- Awareness raising through educational leaflets; and,
- Production of a travel plan for the staff and visitors of the proposed development.

5.4. With regard to mitigation of dust and PM emissions during construction, it is recommended that the measures set out in the 2015 air quality assessment are implemented (*Section 7.1.2 Dust Management*). These measures were chosen based on the IAQM Guidance (2014) (which was updated in 2024 (Institute of Air Quality Mangement, 2024)) and remain appropriate. Below are

examples taken from the full list of mitigation measures outlined in the 2015 air quality assessment:

- All vehicles should switch off engines when they are stationary;
- Undertake daily on-site and off-site inspections, where receptors are nearby, to monitor dust;
- Plan site layout with machinery and dust causing activities located away from receptors, as far as possible;
- Erect solid screens/barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site; and
- Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.

6. Conclusion

6.1. An assessment has been carried out to demonstrate the suitability of the site for the proposed development.

6.2. The baseline section of this report (Section 3) has used available local air quality data, Defra predicted background concentrations and modelled concentrations in the local area from the 2015 air quality assessment.

6.3. The future occupants of the proposed development will not be exposed to NO_2, PM_{10} and $PM_{2.5}$ concentrations that exceed the AQOs and LVs. The concentrations at the proposed development will be below WHO IT 3 for NO_2, and below WHO IT 4 for PM_{10} and $PM_{2.5}$. Furthermore, the proposed development has integrated design-based mitigation measures to reduce exposure of future users to poor air quality. These measures will minimize emissions from the proposed development, supporting the trend for improving air quality and reducing a vulnerable community's exposure to air pollutants, as requested in the NCC's AQAP and Development Management Air Quality SPG.

6.4. Overall, the air quality effects are compliant with regulatory standards and are judged to be 'not significant' and the site is considered to be suitable for its proposed use.

7. Glossary

AQAP	Air Quality Action Plan
AQG	Air quality guideline
AQMA	Air quality management area
AQO	Air quality objective
IAQM	Institute of Air Quality Management
IT	Interim Target
LV	Limit value
NCC	Newport City Council
NO_2	Nitrogen dioxide

PM	Particulate matter
SPG	Supplementary Planning Guidance
WHO	World Health Organization

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9. Professional Experience

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Claire, a director of Kalaco, has over 40 years of experience of air quality management. She has advised national governments in Europe, Asia and Africa, as well as the European Commission on a range of strategic air quality and climate change issues. Claire has contributed to the development of IAQM and EPUK professional guidance, is the honorary President and a former chair of the IAQM, has been a member of a government air quality review group, and advised the Department for Transport on their cleaner vehicles and fuels research programme.

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Liana is a Consultant at APS, having previously completed a MSc Sustainability degree at University of Southampton. She has experience in undertaking air quality assessments for a wide range of developments for planning and permitting applications and support for local authorities. She is currently gaining experience in undertaking odour, indoor air quality and climate change assessments.