OUTDOOR AIR QUALITY REPORT

PROJECT REFERENCE – STEPHENSON HOUSE, HAMPSTEAD RD

Adam Taylor
ARM ENVIRONMENTS

The Site

Address coordinates

Project Scope

- Provide diffusion tube measurements for Nitrogen dioxide concentrations.
- Provide modelled values for Nitrogen Dioxide (NO2) on a 100m2 grid around the site location at 1.5m above ground level.
- Evaluate whether local pollution levels exceed European Limit Values for the Protection of Human Heath at intake height for the building's ventilation provision.

Project History

On the above property, nearing delayed site handover as a new development, Camden Building control have advised on air quality condition, that needs to verify that NOx levels are not beyond an acceptable value at apartment air intake points under the balconies to the whole house ventilation systems.

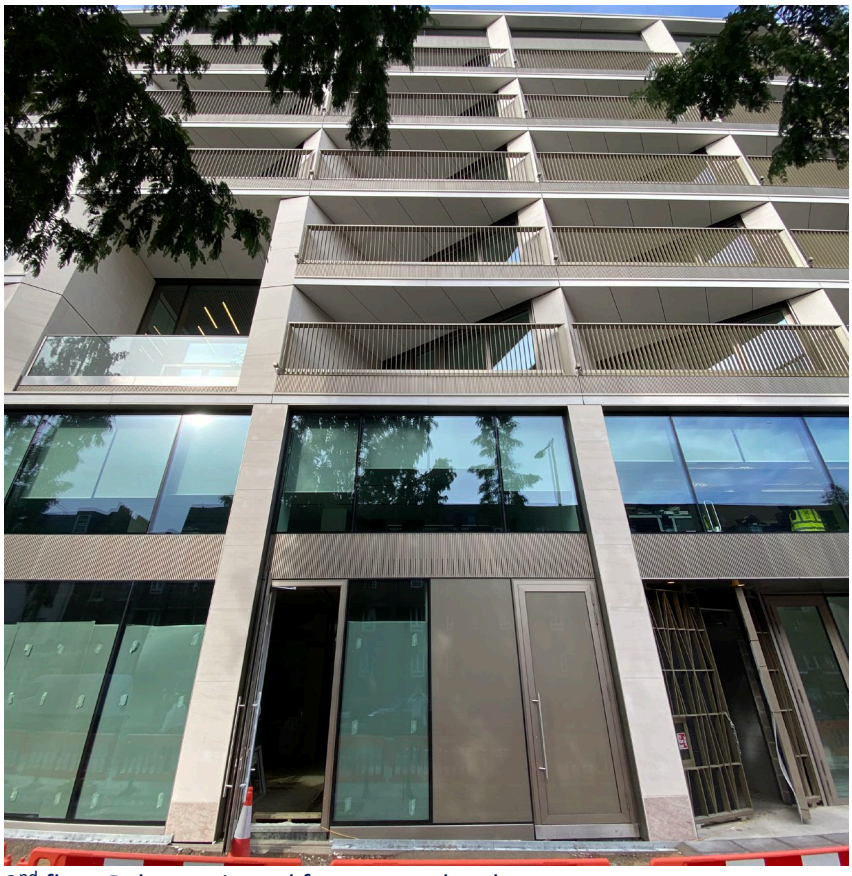
Client had advised on flue discharge Nox which are not an issue to the council but it is the traffic fumes the council want to cover and to determine, if Nox air filters are required for the MVHR units.

Diffusion tube monitoring will take place from September through until December.

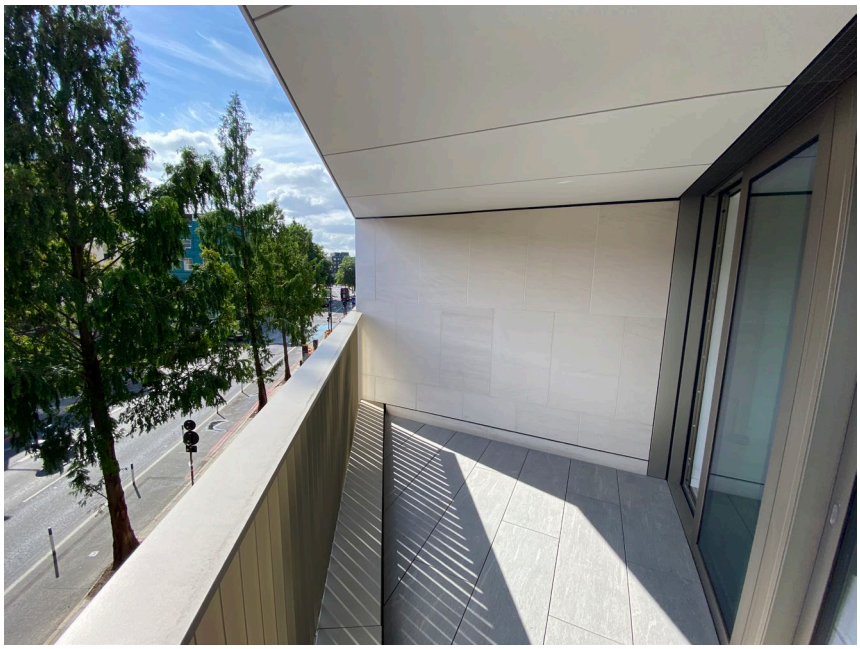
Diffusion tube locations

To evaluate the worst case scenario, the diffusion tubes have been located on the lowest balcony that is closest to traffic-generated pollution. This was judged to be the junction of Hampstead Road and Drummond Street.

Traffic lights at junction of Hampstead road and Drummond Street with 2nd floor balcony shown.



2nd floor Balcony viewed from street level



View towards traffic lights from apartment balcony.

3 Diffusion tubes placed adjacent to MVHR intakes (MVHR not in operation)

Summary of results 8/9-26/9

JOB REFERENCE STEPHENSON HOUSE

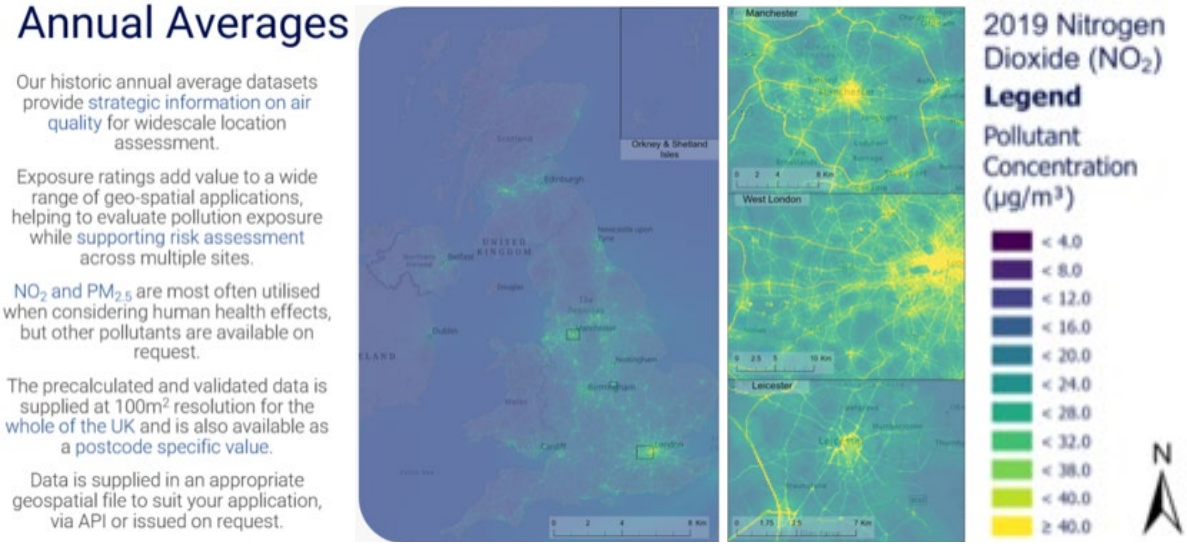
Location	Sample Number	Exposure Data Date On*	Date Off*	Time* (hr.)	µg/m^3 *
Stephenson House	2071844	08/09/2022	26/09/2022	432.83	35.41
Stephenson House	2071845	08/09/2022	26/09/2022	432.83	35.22
Stephenson House	2071846	08/09/2022	26/09/2022	432.83	34.30

Measurements from 3 Diffusion tubes at approximately 9-10m above street level.

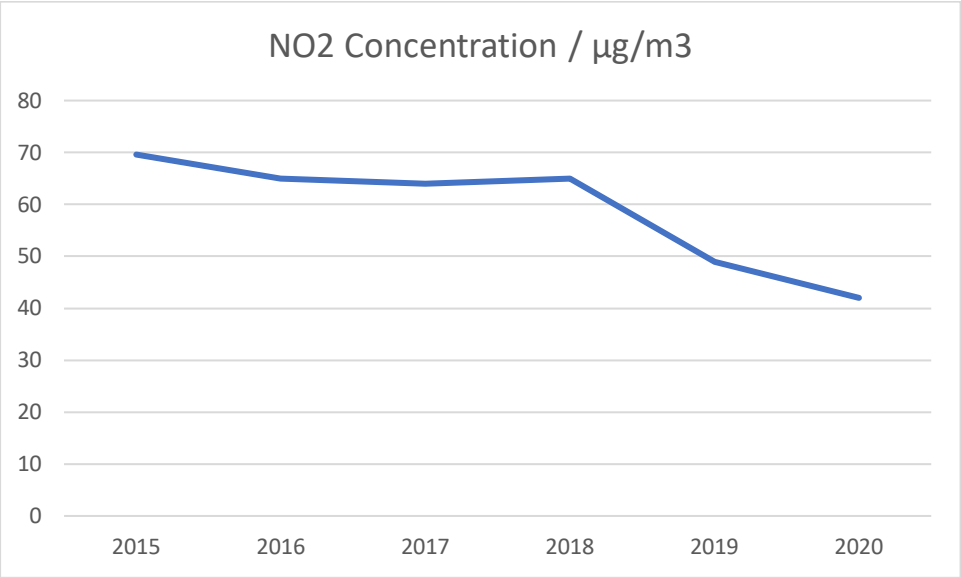
During the diffusion tube monitoring period, we also deployed virtual air quality monitoring. Average NO2 concentration was 36.75µg/m3, this was modelled at 1.5m above ground.

European Limit Values for the Protection of Human Heath - NO2 40µg/m3

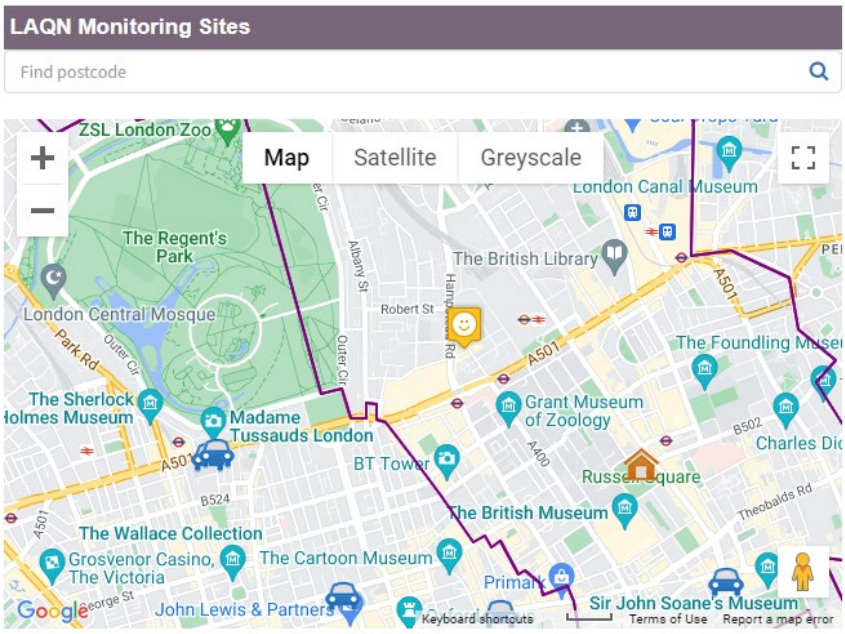
Data Sources



Data from our model is available on a 100m2 resolution, a significant improvement on the 1000m2 resolution available from DEFRA.



Modelled annual NO2 concentrations at 1.5m above ground at the site



The closest urban background monitoring station is in Bloomsbury Park.

Figures for Nitrogen Dioxide (µg/m3)

2019 32

2020 N/A

2021 27

2022 (so Far) 21

Pollutant	Objective	Is it achieving?	Value
Sulphur Dioxide	125 ug/m3 as a 24 hour mean, not to be exceeded more than 3 times a year	YES	0
Sulphur Dioxide	266 ug/m3 as a 15 minute mean, not to be exceeded more than 35 times a year	YES	0
Sulphur Dioxide	350 ug/m3 as a 1 hour mean, not to be exceeded more than 24 times a year	YES	0
PM2.5 Particulate	25 ug/m3 as an annual mean	YES	11
PM10 Particulate	40 ug/m3 as an annual mean	YES	20
PM10 Particulate	50 ug/m3 as a 24 hour mean, not to be exceeded more than 35 times a year	YES	5
Ozone	100 ug/m3 as an 8 hour mean, not to be exceeded more than 10 times a year	YES	8
Nitrogen Dioxide	200 ug/m3 as a 1 hour mean, not to be exceeded more than 18 times a year	YES	0
Nitrogen Dioxide	40 ug/m3 as an annual mean	YES	21

2022 urban background pollutant levels

The closest Roadside Measurements are in Westminster on Marylebone Road

Figures for Nitrogen Dioxide (µg/m3)

2019 63

2020 44

2021 43

2022 (so Far) 44

Pollutant	Objective	Is it achieving?	Value
Sulphur Dioxide	125 ug/m3 as a 24 hour mean, not to be exceeded more than 3 times a year	YES	0
Sulphur Dioxide	266 ug/m3 as a 15 minute mean, not to be exceeded more than 35 times a year	YES	0
Sulphur Dioxide	350 ug/m3 as a 1 hour mean, not to be exceeded more than 24 times a year	YES	0
Ozone	100 ug/m3 as an 8 hour mean, not to be exceeded more than 10 times a year	YES	0
Nitrogen Dioxide	200 ug/m3 as a 1 hour mean, not to be exceeded more than 18 times a year	YES	0
Nitrogen Dioxide	40 ug/m3 as an annual mean	NO	44
Carbon Monoxide	10 mg/m3 as a maximum daily running 8 hour mean	YES	0

2022 Roadside measurements Marylebone Road

Conclusion based on early results

- Improvements in air quality around the site since planning was originally granted in 2017 are significant.
- The impact of the expanded ULEZ will continue to improve air quality beyond that seen in the annual data that is currently available.
- Improvements in combustion vehicle emissions, and a switch to electric vehicles mean that over the lifetime of the building, external air quality will improve.
- Diffusion tube measured pollutant levels at the lowest building intakes are lower than the 40µg/m3 limit.
- Modelled pollutant levels at 1.5m above ground level are lower than the 40µg/m3 limit.
- Mitigation against NO2 and particulate pollution is unlikely to be required for this development in order to meet European Limit Values for the Protection of Human Heath