

7-9 ST GEORGES SQUARE LLP



**26 DITCHLING ROAD, BRIGHTON
EAST SUSSEX BN1 4SF**

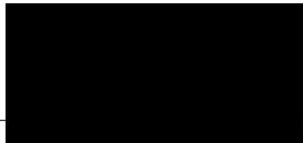
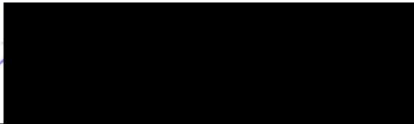
Air Quality Assessment

October 2023



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Environmental Assessment Services Ltd

REPORT DATA SHEET

Requirement	Data
Report Reference	644/7-9STGEORGES/DITCHLING/AQA
Date	October 2023
Client	7-9 St Georges Square LLP
Report type	Air Quality Assessment
Purpose	Submission to Planning
Revisions	
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Air Quality Assessment

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1 THE SITE AND BACKGROUND

- 1.1 The site comprises a developed plot of land located immediately adjacent to the junction of Viaduct Road, Ditchling Road and Upper Lewes Road (A270), approximately 1 km north of the centre of Brighton. The development on site comprises a single, detached three storey building, most recently used as offices on the ground floor and residential flats on the upper two floors, with parking and access from Upper Lewes Road. The Ordnance Survey (OS) map reference for the centre of the site is TQ 31516 05347. See Figure 1 in Appendix A for Site Location Plan.
- 1.2 An air quality assessment is required to support the planning application for the conversion of the ground floor office space into self-contained flats. The assessment involved a comparison of NO₂ results from the Brighton and Hove AQMA monitoring stations nearest to the site and a desktop assessment of air quality at the site based on previous NO₂ diffusion tube monitoring at the site and in the surrounding area. Local air quality monitoring data and Air Quality Status Reports were obtained from Brighton and Hove City Council.
- 1.3 The site was visited on 4 October 2023 and revisited on 10 October 2023.
- 1.4 Land uses surrounding the site are predominately residential; flats lie to the north of the site, on the opposite side of the Upper Lewes Road, and houses lie to the east (rear) of the site, fronting on to Rose Hill, and to the south of the site, fronting Ditchling Road. Offices occupy a building to the northeast of the site, on the opposite side of Ditchling Road.
- 1.5 The most likely source of air pollution at the site is highway traffic emissions from traffic using the junction of Viaduct Road, Ditchling Road and Upper Lewes Road, lying immediately adjacent to the site.

2 AIR QUALITY STANDARDS

- 2.1 Current UK air quality legislation is mainly based on the implementation of European Union Directives, with the introduction of new “Daughter” Directives. General air quality standards started with addressing substances associated with the burning of coal, but more recently concentrate largely on substances associated with vehicle emissions.

- 2.2 In the UK, the Environment Act of 1995 required the production of a National Air Quality Strategy. The Strategy sets out National Air Quality Objectives (AQOs) in order to achieve reductions in air pollution in the medium term. See Table 2.1. Areas where there is currently difficulty in achieving the objectives may be classified as Air Quality Management Areas (AQMAs), and additional controls may be imposed on activities likely to give rise to air pollution.

TABLE 2.1
UK AIR QUALITY OBJECTIVES

Pollutant	Air Quality Objective		Date to be achieved by (and maintained thereafter)
	Concentration	Measured as	
Benzene	5.00 µg/m ³	Annual mean	31.12.2010
1,3-butadiene	2.25 µg/m ³	Annual mean	31.12.2003
Carbon monoxide	10 mg/m ³	Max daily 8 hr mean	31.12.2003
Lead	0.25 µg/m ³	Annual mean	31.12.2008
Nitrogen dioxide	200 µg/m ³	1-hr mean <18/yr	31.12.2005
	40 µg/m ³	Annual mean	
Particulate (PM ₁₀)	50 µg/m ³	24-hr mean <35/yr	31.12.2004
	40 µg/m ³	Annual mean	31.12.2004
Sulphur dioxide	350 µg/m ³	1-hr mean <24/yr	31.12.2004
	125 µg/m ³	24-hr mean <3/yr	31.12.2004
	266 µg/m ³	¼-hr mean <35/yr	31.12.2005

- 2.3 The two parameters of most concern in the urban environment are presently NO₂ and PM₁₀, as these are the pollutants considered most likely to exceed current air quality objectives.
- 2.4 The site lies on the northern edge of an Air Quality Management Area (AQMA), designated by Brighton & Hove City Council (updated August 2013). The air quality in the area around the site would therefore be considered likely to exceed the current Air Quality Objective for annual average concentrations of nitrogen dioxide (NO₂) and/or PM₁₀ particulate.

3 AIR QUALITY MONITORING

- 3.1 In accordance with the National Air Quality Strategy, air quality is regularly monitored by local authorities at locations throughout the UK.
- 3.2 Monitoring stations can be fixed units continuously measuring a range of pollutants, known as automatic monitoring sites. In addition to fixed monitoring stations, additional (non-automatic) NO₂ diffusion tubes may be deployed at several locations within the local authority boundary.

- 3.3 There are three automatic monitoring stations within the Brighton and Hove City boundary, the nearest to the site is located on Lewes Road (BH6), some 675 m northeast. The nearest monitoring stations to the site are non-automatic monitoring stations (NO₂ diffusion tube locations), operated by the local authority, Brighton and Hove City Council. The NO₂ diffusion tubes located nearest to the site, some of which are closer than the automatic monitoring station, are identified in Table 3.1:

TABLE 3.1
LOCATION AND PROXIMITY OF NON-AUTOMATIC
MONITORING LOCATIONS TO 26 DITCHLING ROAD

Monitoring Location	Address	Proximity to site
C20	Ditchling Road near Viaduct Terrace	30 m S
C21	Viaduct Terrace near Ditchling Road, Brighton	55 m W
C19	Oxford Street near Ditching Rd, Brighton	185 m S
E06	Beaconsfield Road near Ditchling Rise, Brighton	510 m NW

- 3.4 The above monitoring locations are considered likely to be reasonably representative of the air quality conditions at the site also.

4 AMBIENT CONDITIONS AT THE SITE

4.1 Nitrogen Dioxide (NO₂)

- 4.1.1 NO₂ was monitored at the site by diffusion tubes (placed in triplicate) in 2016. The monitoring locations (A – D) are shown in Figure 2 and the results are given in Table 4.1 below:

TABLE 4.1
RESULTS FROM THE ONSITE MONITORING IN 2016

Location	Average NO ₂ concentration µg/m ³ (adjusted for 2016 bias factor of 0.92)
A	39.7
B	47.3
C	26.3
D	23.6

4.1.2 NO₂ monitoring results for the diffusion tube monitoring locations closest to the site (as mentioned in 3.3 above) are taken from the Brighton and Hove City Council online document 'Council Diffusion Tube Results' and summarised in Table 4.2 below:

TABLE 4.2
RESULTS FROM NO₂ MONITORING STATIONS CLOSEST TO SITE
(ANNUAL MEAN µg/m³)

Monitoring Location	YEAR							
	2016	2017	2018	2019	2020	2021	2022	2023 *
C20	41.3	40.5	40.7	36.8	31.0	29.9	33.3	35.8
C21	49.7	29.7	49.7	44.6	36.5	36.3	37.5	40.4
C19	43.8	44.9	39.2	36.5	29.0	36.3	37.5	35.4
E06	-	-	-	-	27.5	27.0	31.1	33.4
AQO Annual mean	36.9							

*Average over 9 months (not 12)

4.1.3 The annual average concentrations of NO₂ recorded at the diffusion tube monitoring locations closest to the site since 2020 did not exceed the AQO of 40µg/m³. The average NO₂ concentration for the first nine months of 2023 at C21 is currently just exceeding of 40µg/m³.

4.1.4 Overall, the results of the monitoring at locations C19, C20 and C21 show a clear reduction in NO₂ concentrations across the area subject to monitoring between 2016 and 2022. This is probably partly due to the increase in the proportion of low emission vehicles in use and probably partly due to the actions of the Brighton and Hove Environmental Improvement Plan, as part of the National Air Quality Strategy. Actions include improving the local cycling and walking infrastructure, ultra-low and zero emissions zones for busses and promoting e-cargo bikes.

4.2 The average reduction in NO₂ concentrations at C19, C20 and C21 from 2016 to 2022 is 19.4%. It would appear reasonable to apply the same reduction to the NO₂ concentrations measured on the site in 2016. See Table 4.3 below:

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TABLE 4.3
RESULTS FROM THE ONSITE MONITORING UPDATED TO 2023

Location	Average NO ₂ concentration µg/m ³ (adjusted for 2023)
A	32.0
B	38.1
C	21.2
D	19.0

4.3 Location B is at the junction of Ditchling Road with Upper Lewes Road and would be anticipated to receive the highest dose of NO₂.

4.4 Based on the above, the NO₂ concentration at the site would appear unlikely to exceed the 40 µg/m³ annual average NO₂ AQO.

5 PROBABLE IMPACTS OF ANY PROPOSED REDEVELOPMENT ON AIR QUALITY

5.1 The site is located within a developed plot at the junction of Viaduct Road, Ditchling Road and Upper Lewes Road (A270). The site is currently used as a mixed commercial and residential property.

5.2 There may be short-term impacts on air quality during any site preparation and redevelopment phases, principally from dust generated during any proposed construction work. As a redevelopment of the existing building. However, as the scheme is only for the change of use of the ground floor and the work carried out will be largely internal, impacts are not thought likely to be significant. In any case, this is best controlled by vigilance and applying dust suppression/control measures where necessary, particularly on dry and/or windy days between April and October, and during works with a high potential to produce dust.

5.3 The redeveloped site in service will have some impacts on air quality from traffic generated by residents and office site users, plus emissions from gas appliances. Identified as the most likely source of air pollution at the site, traffic emissions may have an impact on the local air quality. The proposed redevelopment for the change of use of the ground floor is unlikely to result in vehicle movements in excess of ten per day. This will be insignificant in terms of the volume of traffic on the surrounding highways and is not therefore expected to cause any significant adverse air quality impacts.

6. MITIGATION MEASURES

6.1 Of principle concern would be the introduction of new residential receptors into the AQMA. Whilst it is predicted that new residents are unlikely to be exposed to air quality exceeding the AQO for nitrogen dioxide (and possibly

PM₁₀) at the site. The results from local diffusion tube monitoring show that air quality surrounding the site should not exceed the current AQO. Opening windows for ventilation on the west and north facades may, expose residents to poor air quality.

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- 6.2 Residential use is presently confined to the upper two floors of the three-storey building and there should be a slight improvement in air quality above ground floor level.
- 6.3 A feasible option to improve internal air quality would be a balanced ventilation system for the residential zones, drawing cleaner air from the rear (east/southeast) facade and discharging air from the opposite facade (to minimise recirculation risks). This could be a "whole house" type ventilation system incorporating a heat exchanger to minimise the impact on heating costs. The system fan unit could be installed in any residual roof space above the second floor. Inlets and outlets will need to take account of any acoustic requirements for the affected facade.
- 6.4 To minimise the impact on air quality, cycle storage could be provided to encourage cycle use and residents provided with information regarding the availability of public transport services nearby.

7 CONCLUSIONS AND RECOMMENDATIONS

- 7.1 The site lies within a designated AQMA, where airborne pollutant standards may occasionally be exceeded. The results of NO₂ diffusion tube monitoring undertaken at the site in 2016, and updated to local monitoring sites, indicate that the NO₂ concentrations are unlikely to exceed the current Air Quality Objectives (AQO). NO₂ concentrations should be well within the AQO in the eastern/southeastern part of the site. See air quality assessment summary matrix in Table 7.1 below.

TABLE 7.1
AIR QUALITY ASSESSMENT SUMMARY MATRIX

CRITERIA		CONCLUSION
AQOs likely to be exceeded?	At present	No
	Post-redevelopment	No
Increase in number of receptors exposed?		Yes (if additional residents)
Air quality impacts from proposed redevelopment in service?		Negligible
Remedial measures indicated?		Suggested

- 7.2 The proposed residents on the ground floor, are unlikely to be exposed to ambient air quality which exceeds current AQOs. Some measures to reduce air quality impacts are recommended. Suggested measures could comprise a balanced/whole house ventilation system with air taken from the east/southeast

facade, furthest from the roads. Used air could be discharged through the western or northern facades.

- 7.3 It is not considered that the redevelopment will give rise to any significant increase in the overall emissions in the AQMA through increased traffic volume, due to the limited car parking provision onsite. However, it is recommended that cycle storage should be provided to encourage cycle use and charging points for electric vehicles should be provided at the parking spaces.
- 7.4 In any redevelopment of the existing building onsite, the majority of works will be internal, and the proposed development is not considered to cause a significant adverse impact on air quality through dust generation during construction works. In any case, dust generation may be minimised by vigilance during site work, particularly on dry and windy days between April and October, and during activities with a high potential to produce dust.

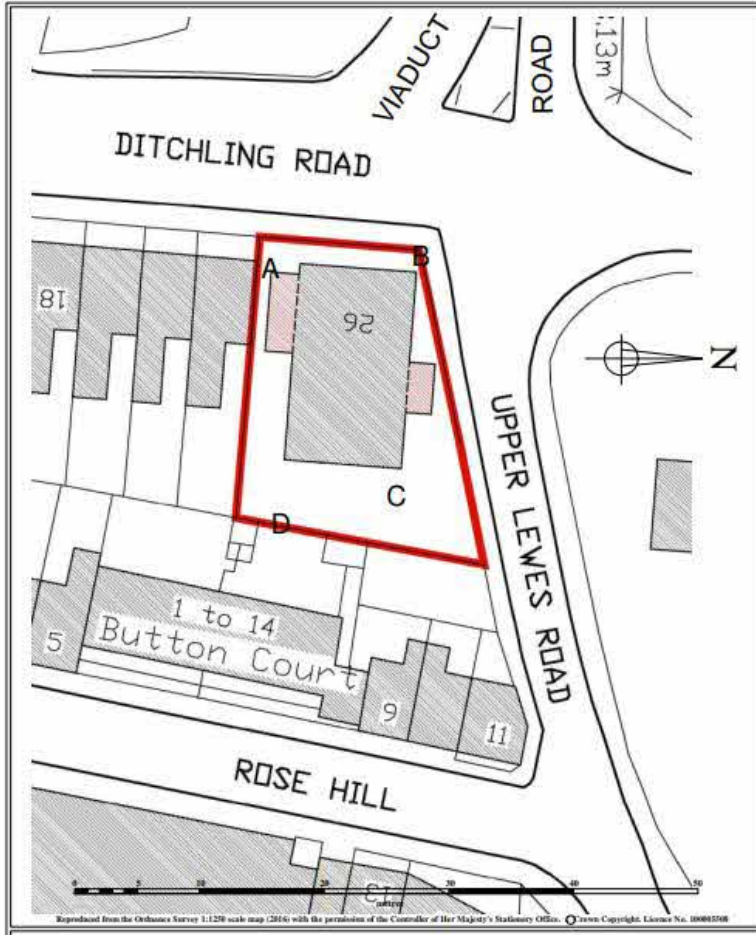
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APPENDIX A:

Figure 1: Site Location Plan

Figure 2: Site Location Plan Showing NO₂ Tube Location





APPENDIX B :
Diffusion Tube Results

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A1

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture For Monitoring Period (%) ¹⁾	Valid Data Capture 2022 (%) ²⁾	2018	2019	2020	2021	2022
A23 C01-2020	531361	104040	Roadside	Same as to right	97.8			25.1	26.0	28.0
A23 C02-2022	531255	104062	Roadside		97.8					31.6
B2066 C04-2010	531228	104088	Roadside		91.2	48.2	43.5	33.6	30.6	34.9
C05-2012	531230	104260	Urban Background		97.8	22.0	21.0	16.9	16.3	18.6
B2066 C10-2012	530995	104271	Roadside		97.8	45.5	41.3	32.3	29.9	34.1
B2066 C11-2007	530947	104284	Roadside		89.0	54.6	48.5	35.0	35.8	41.8
B2066 C11-2012	530890	104302	Kerbside		61.3	90.8	77.4	51.2	47.6	54.1
A2010 C12-2010	530900	104451	Roadside		97.8	45.3		30.4	29.1	34.8
A2010 W01-2005	530969	104785	Roadside		80.2	41.1	34.0	25.8	28.3	34.8
C-Link C13-2014	530770	104363	Roadside		81.9	40.5	36.6	31.2	29.1	32.1
A23 C09-2005	531302	104392	Roadside		97.8	47.2	41.1	27.5	28.1	29.3
A23 C15-2005	531401	104669	Roadside		97.8	37.1	38.0	29.4	27.6	29.8
A23 C16-2013	531400	104844	Roadside		89.3	38.9	37.7	26.6	28.5	32.6
A23 C17-2012	531364	104962	Roadside		89.3	53.9	49.0	37.5	35.0	37.7
A23 C18-2019	531369	105042	Roadside		97.8		61.8	44.8	39.1	41.0
A23 C18-2010	531373	105136	Roadside		91.2	54.7	52.6	39.7	36.8	42.8
A23 C19-2021	531472	105161	Roadside		79.9	39.2	36.5	29.0	31.2	32.7
A23 C20-2005	531496	105315	Roadside		97.8	40.7	36.8	31.0	29.9	33.3
A23 C21-2005	531451	105356	Roadside		97.8	49.7	44.6	36.5	36.3	37.5
A23 C23-2005	531189	105375	Roadside		97.8	43.1	39.5	30.6	28.3	31.2
A270 C24-2015	531101	105443	Roadside		97.8	51.1	44.0	38.3	37.5	40.4
A270 C25-2010	530985	105419	Roadside		97.8	44.3	42.7	38.6	37.5	41.5
A270 C26-2022	530870	105354	Kerbside		89.3					47.9
B2199 C28-2010	531032	104843	Suburban		97.8	42.9	37.7	33.5	33.1	33.3
A23 E01-2016	531101	105498	Roadside		97.8	41.9	34.3	30.2	28.9	30.4
A23 E02-2009	530233	106515	Roadside		97.8	41.1	34.7	31.4	28.3	31.3
C-Link E02-2012	530063	106368	Roadside		81.0	42.0	39.2	35.7	34.4	35.9
A23 E06-2020	531107	105595	Roadside		97.8			27.5	27.0	31.1
A270 E07-2019	531838	105349	Roadside		97.8		51.0	46.5	45.8	46.3

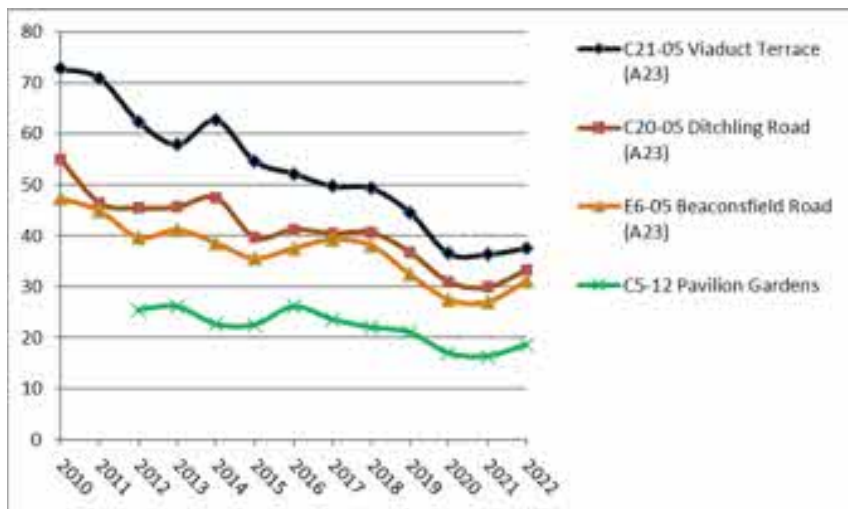
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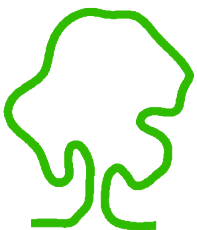
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B2066 C10-2012	530995	104271	Roadside	97.8	45.5
B2066 C11-2007	530947	104284	Roadside	89.0	54.6
B2066 C11-2012	530890	104302	Kerbside	61.3	90.8
A2010 C12-2010	530900	104451	Roadside	97.8	45.3
A2010 W01-2005	530969	104785	Roadside	80.2	41.1
C-Link C13-2014	530770	104363	Roadside	81.9	40.5
A23 C09-2005	531302	104392	Roadside	97.8	47.2
A23 C15-2005	531401	104669	Roadside	97.8	37.1
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A23 C18-2019	531369	105042	Roadside	97.8	
A23 C18-2010	531373	105136	Roadside	91.2	54.7
A23 C19-2021	531472	105161	Roadside	79.9	39.2
A23 C20-2005	531496	105315	Roadside	97.8	40.7
A23 C21-2005	531451	105356	Roadside	97.8	49.7
A23 C23-2005	531189	105375	Roadside	97.8	43.1
A270 C24-2015	531101	105443	Roadside	97.8	51.1
A270 C25-2010	530985	105419	Roadside	97.8	44.3
A270 C26-2022	530870	105354	Kerbside	89.3	
B2199 C28-2010	531032	104843	Suburban	97.8	42.9
A23 E01-2016	531101	105498	Roadside	97.8	41.9
A23 E02-2009	530233	106515	Roadside	97.8	41.1
C-Link E02-2012	530063	106368	Roadside	81.0	42.0
A23 E06-2020	531107	105595	Roadside	97.8	
A270 E07-2019	531838	105349	Roadside	97.8	51.0

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Diffusion Tubes AQMA1-A23 NO2





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