AIR QUALITY ASSESSMENT

PROJECT:

The Joint, Field Street & Leeke Street

PROJECT NUMBER:

P1857

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1.0 EXECUTIVE SUMMARY

QuinnRoss Energy were commissioned to develop an air quality assessment (AQA) for the proposed *The Joint* development, on Field Street and Leeke Street in the London borough of Camden, that will outline the development's impact on local air quality and the measures implemented to mitigate them.

The site is currently a two storey commercial unit, being used as a recording studio, and 7 no. residential apartments over two storeys. The proposal is to maintain the same storeys of the existing but with a major refurbishment of the commercial space and 2 no. additional apartments to make 9 no. residential apartments through a small extension at 3rd floor.

The assessment found the following conclusions:

Assessment	Risk	Conclusion
Current air quality	-	The whole of Camden is under an AQMA, meaning air quality is of concern with high nitrogen and particulate levels. Quality has improved since 2016, likely due to Covid restrictions, however the area remains in a focus area. The proposed development cannot negatively affect local air quality in any significant way.
Construction impacts	Low	Considering the location of the site within a built-up area, and the presence of existing residents some disruption to air quality is impossible to avoid most likely through dust and particulates. However, the contractor will be held to the management mitigation strategy (Section 7.03 of this report) and the works undertaken are not significant with little demolition required and the majority of works consisting of internal refurbishment.
Operational impacts	Low	The site will have zero NO_X emissions due to its grid supplied electricity heat pump system and natural ventilation strategy. It will also have extensive cyclist facilities and be car free thereby discouraging inhabitants using personal vehicles and increasing traffic pollutants. All mechanical ventilation systems on site will have appropriate filtration systems on intakes to protect inhabitants from local air pollution.
Improving air quality	Low	The site is all hardscape with no ecological value at all. The site will not increase hardscape at all and will be adding a green/sedum roof to increase ecological value.

As a result, the proposed site works and development should have a minimal to no impact on local air quality.

3.0 PLANNING POLICY AND LEGISLATION

The London Borough of Camden, as of 2021, is not meeting legal limits for all pollutants regulated by the EU. Nitrogen Dioxide (NO_2) is a particular issue especially along major traffic routes through the borough. As a result, the Borough has been declared an Air Quality Management Area (AQM), and therefore any application that introduces additional sensitive receptors (inhabitants) to the area should be supported by an Air Quality Assessment to establish that appropriate living standards can be provided.

The AQA has been undertaken in accordance with the relevant national, regional, and local planning policy:

- Establish existing air quality.
- Establish nearby sensitive receptors.
- Assessment of air quality and dust impacts during construction.
- Assessment of air quality during operation.
- Evaluation of outline proposals against the AQA benchmarks.
- Assessment of the mitigation strategy to limit the building users and nearby receptors to air pollution.

Policy	Description / Summary
National	National Planning Policy Framework (Ministry of Housing, Communities & Local Government 2019).
	Air quality plan for Nitrogen dioxide (NO_2) in UK (DEFRA 2017)
	Guidance on the assessment of Dust from demolition and construction (IAQM, 2014).
	Local air quality management: Technical guidance LAQM.TG(09) (Dept for Environment, Food & Rural Affairs (DEFRA) 2012).
Regional	The London Plan 2021.
	Sustainable Design & Construction: Supplementary Planning Guidance (Mayor of London 2014).
	The Control of Dust and Emissions during Construction and Demolition: Supplementary Planning Guidance (Mayor of London 2014).
	Cleaning the Air – The Mayor's Air Quality Strategy (Mayor of London 2010).
	Air Quality and Planning Guidance (London Councils, 2007).
Local	Camden Local Plan 2017
	Camden Planning Guidance 2021 – Air Quality

Table 01: Current policies

4.0 SITE OVERVIEW

4.01 Existing Site

The development is located in the London Borough of Camden and the nearest postcode is WC1X 9DG. The site is currently commercial and residential spaces, all hardscape, and is bordered by the A201 to the East and A501 to the North.

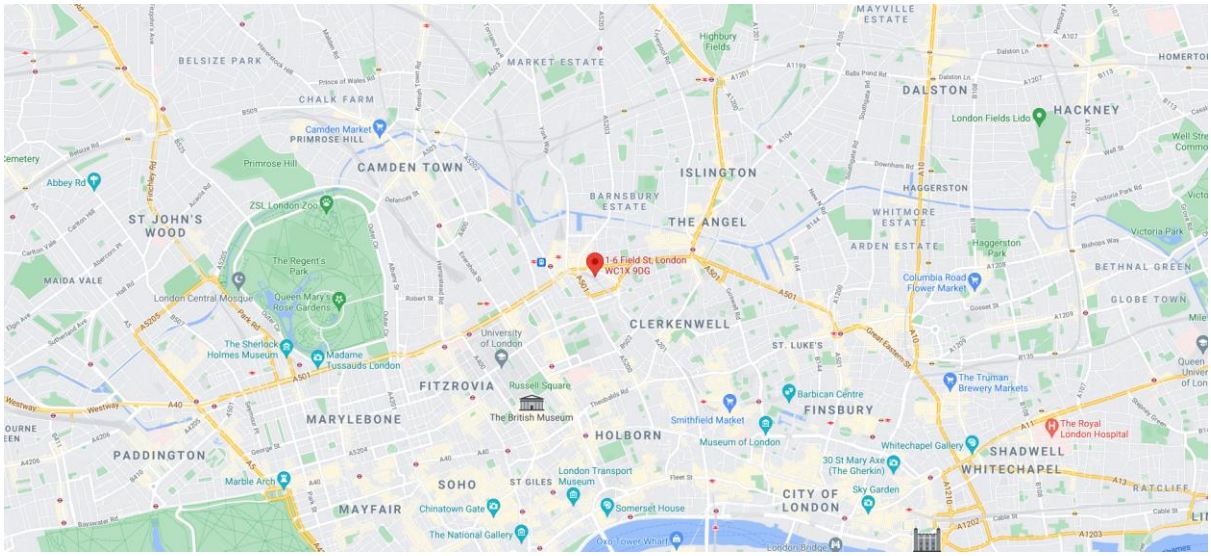

Image 01: Map showing development site location.

4.02 Proposed Development

The site comprises an existing four storey building, with an existing recording studio over ground and first floor. There are 7 no. existing residential apartments over the second and third floors. The proposed development involves the refurbishment and extension of the commercial floorspace at ground and first floor, and the extension of the residential floorspace at the third floor to provide 2 no. additional residential units.

5.0 LOCAL RECEPTORS

5.01 Overview of Receptors

A sensitive receptor is a location that may be affected by the emission of pollutants and particulate matter during construction and operation of a site, including building plant and transport.

In accordance with the institute of Air Quality Management (IAQM) Guidance on the assessment of dust from demolition and construction, assessment of human and ecological receptors is required within:

- 50m of the route used by construction vehicles.
- 350m of the boundary of the site.
- 500m of the site entrance.

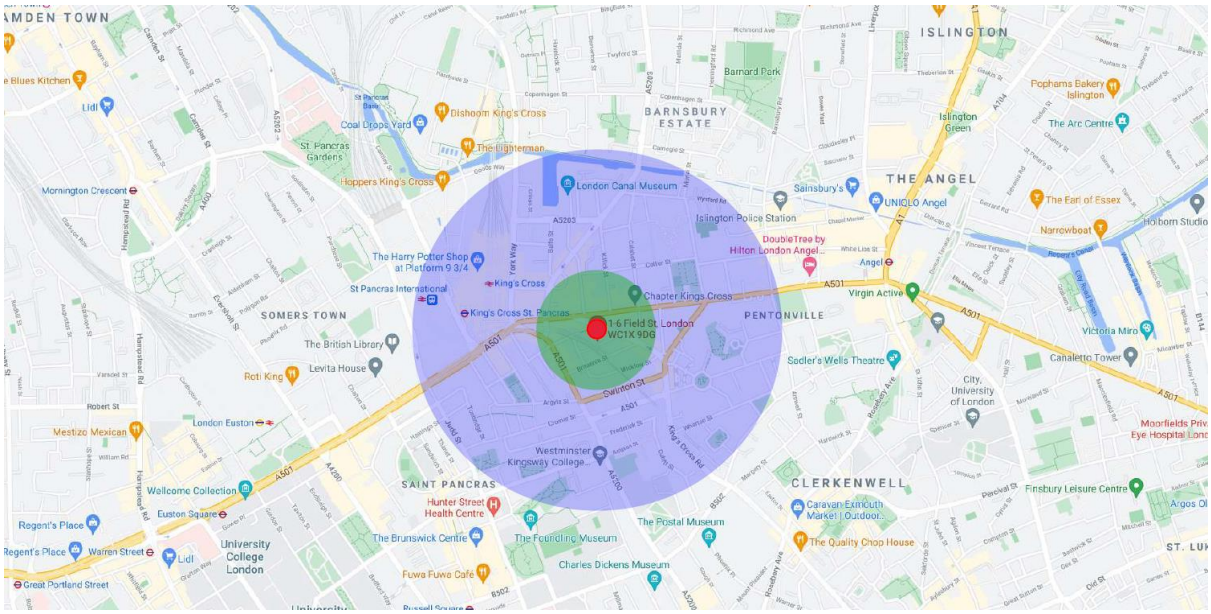

Image 02: Aerial view showing 500m (blue), 350m (green) and 50m (red)

5.02 Human Receptors

A human receptor is a person or property that may experience the adverse effects of airborne dust relevant to the air quality objectives. In terms of effects, this will mostly relate to residential dwellings but also schools, hospitals, food stores and amity spaces.

As the surrounding area is densely populated and contains numerous residential dwellings the proposed development has a number of human receptors within 350m of the site.

- Schools – There are no schools within 350m of the site.
- Nurseries – There are no nurseries within 350m of the site.
- Hospitals – There is 1 no. non-A&E hospital within 500m of the site.
- Doctors' surgery - There is 1 no. GP clinic within 500m of the site.

5.03 Ecological Receptors

According to the MAGIC website, a government database of ecological valued sites across the UK, there are no ecological sites identified within 500m of the site.

6.0 CURRENT AIR QUALITY

6.01 Local Status

The whole of Camden is under an AQMA. A number of focus areas have been declared in the area shown on the map below (areas in light green):

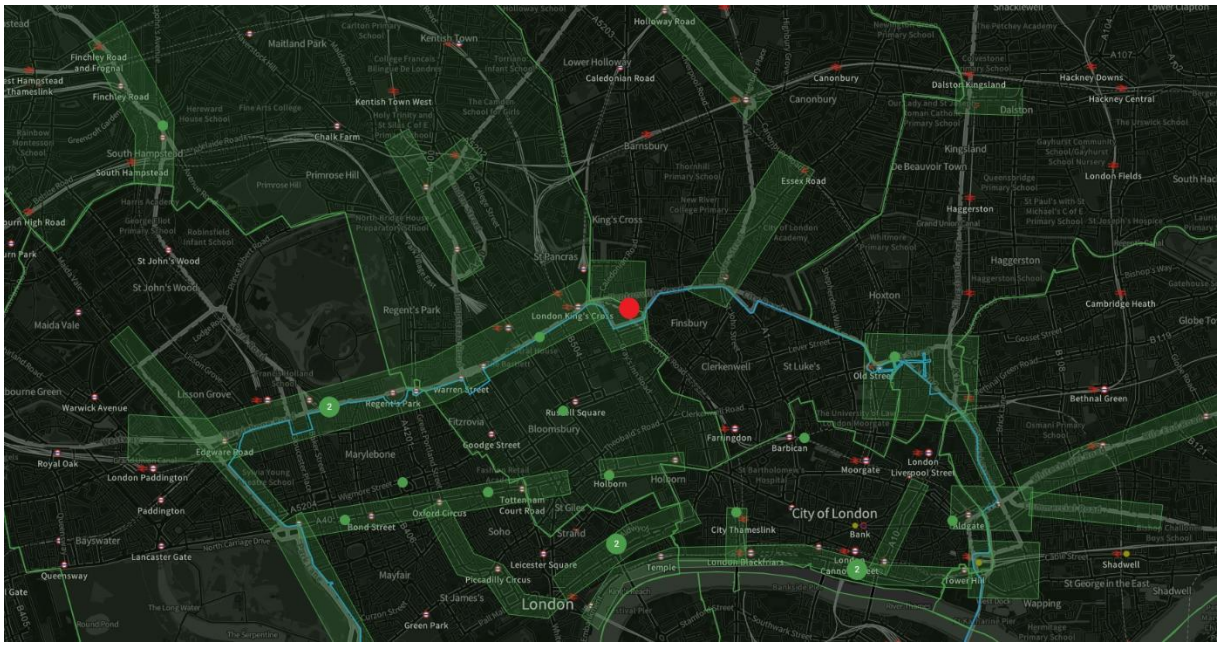

Image 03: Aerial view showing local focus areas

The site is currently not located in an NO_2 focus area.

6.02 Current NO_2 Levels

A summary of the annual mean NO_2 concentrations of the closest monitoring stations is shown below:

Monitoring Station	Annual mean concentration (40 µg/m^3)					
	2021	2020	2019	2018	2017	2016
Euston Road	-	-	-	-	83	88
Bloomsbury	27	-	32	36	38	42
Westminster	-	-	-	-	-	-
Holborn	36	-	-	-	-	84

Table 02: 2016-2021 annual mean NO_2 concentration (µg/m^3)

The London Atmospheric Emissions Inventory (LAEI) database shows the NO_2 concentrations for this site below:

Image 04: LAEI NO_2 concentrations for the site and surrounding area

A summary of the annual mean PM_{10} concentrations of the closest monitoring stations is shown below:

Monitoring Station	Annual mean concentration (µg/m^3)					
	2021	2020	2019	2018	2017	2016
Euston Road	-	-	22	-	-	39
Bloomsbury	18	16	18	-	19	20
Westminster	19	-	22	24	24	40
Holborn	-	-	-	-	-	-

Table 03: 2015-2020 annual mean PM10 concentration (µg/m^3)

The LAEI database shows the particulate matter under 10µm diameter (PM_{10}) for this site below:

PM_{10} data shows the site was over the 25 µg/m^3 going back to 2016, however, as with the NO_2, levels have dropped below that in 2020.

NO_2 data shows the site was over the limit going back to 2016, however NO_2 levels have dropped below that in the last few years, particularly 2020 though this is likely due to COVID-19 restricting travel.

NO_2 levels are also clearly highly concentrated to the road network, therefore avoiding pollution in these concentrated areas will be the priority.

7.0 CONSTRUCTION IMPACTS

7.01 Dust Levels

Construction phase impacts as a result of the proposed development have been assessed using the Institute of Air Quality Management (IAQM) *Guidance on the assessment of dust from demolition and construction*. The risks are assessed as follows:

Activity	Dust Emission Magnitude	Justification
Demolition	Small	The significant majority of the building will remain unchanged, any demolition works will be minimal at worst.
Earthworks	Small	The total site area is less than 2500 m^2 and no more than 5 heavy earth-moving vehicles are likely to be active at any one time.
Construction	Small	The total new building volume will be minimal. Dusty construction materials, such as on-site concrete batching, will be minimal.
Trackout	Small	Around 1-5 HDV (>3.5t) outward movements in one day, moderately dusty surface material, no unpaved road length.

Table 04: Dust emission magnitudes from construction activities

7.02 Risk to Receptors

The sensitivity of receptors in the surrounding area has been reviewed and concluded as follows:

Effect	Risk	Justification
Dust and soiling	Medium	Residential properties are within 350m of the site which will be occupied throughout the day, as will other sensitive receptors such as places of work, schools, and doctors. Despite this dust and soiling from the site is expected to be minimal.
Particulate health impacts	Medium	Residential properties are within 350m of the site, however again particulate pollution is expected to be minimal.
Ecological effects	Low	There are no sites of ecological value near the site.

Table 05: Sensitivity of nearby receptors to dust impacts

7.03 Construction Pollution Mitigation Measures

The overall risk from dust pollution, if left unmitigated, is a medium risk. As a result, the following mitigation measures will be implemented on site:

Site Management	
No.	Mitigation Measure
1	Develop and implement a stakeholder communication plan that includes community engagement
2	Develop a dust management plan.
3	Display name of person(s) accountable for dust management on site boundary.
4	Display name of head of regional office contact information.
5	Record all dust and pollutant emissions complaints.
6	Make a compliant log available for local authority.
7	Carry out regular site inspections to monitor air quality. Share reports with local authority.
8	Increase site inspections when activities increase.
9	Record exceptional incidents that cause excessive pollution.
Preparing and Maintaining the Site	
10	Plan the site layout so that dust causing activities take place as far from receptors as possible.
11	Erect solid screens around activities with high dust producing activities.
12	Full enclosure of site when site wide activities will produce more dust than usual.
13	Avoid site run-off.
14	Keep site fencing, barriers and scaffolding clean using wet methods.
15	Remove waste from site as soon as possible.
16	Cover seed or fence stockpiles to prevent wind whipping.
17	Carry out regular dust soiling checks of buildings within 100m of site.
18	Agree monitoring locations with local authority.
19	Commence baseline monitoring at least 3 months before phase begins.
20	Place real-time duct and pollutant monitors across the site and have them checked regularly.
Operating Site Vehicles and Sustainable Travel	
21	All vehicles will not idle engines when stationary.
22	Avoid the use of diesel or petrol powered generators whenever possible.
23	Have a maximum speed limit of 10 mph on hard surfaced roads.
24	Produce a construction logistics plan to manage the sustainable delivery of goods and materials.
25	Produce a travel plan for site workers that encourages sustainable travel i.e., walking, cycling, car-sharing.
Operations	
26	Only use cutting or grinding equipment in conjunction with suitable dust suppression techniques.
27	Ensure an adequate water supply for dust suppression techniques.
28	Use enclosed chutes, conveyors, and covered sites.
29	Minimise drop heights from conveyors, loading shovels and hoppers.
30	Ensure equipment on site is available to clear dry spillages.
Waste Management	

31	Reuse and recycle waste to reduce dust from waste materials.
32	Do not use bonfires or burn waste material.
Demolition	
33	Soft strip existing buildings, retaining external walls and windows to provide dust screen.
34	Use water suppression.
35	No explosive blasting.
36	Bag and remove biological debris.
Earthworks	
37	Only remove secure covers in small areas, not all at once.
Construction	
38	Avoid scabbling if possible.
39	Ensure sand and other aggregates are stored in bunded areas and not allowed to dry out.
40	Ensure bulk cement and other powder materials are delivered in enclosed tankers.
41	Ensure fine powder materials are sealed in bags after use and stored appropriately.
Trackout	
42	Regularly use water-assisted dust sweepers on local roads.
43	Avoid dry sweeping.
44	Ensure all transport vehicles are securely covered.
45	Inspect all haul routes and record findings.
46	Damp down haul routes.
47	Regularly inspect haul routes for integrity, repair as quickly as possible when damage occurs.
48	Access to gates to located at least 10m from receptors where possible.

Table 06: Schedule of construction phase mitigation measures

8.0 OPERATIONAL IMPACTS

8.01 Operational Emissions

Policy 7.14 requires all new developments to be air quality neutral, meaning no NOx emissions from heating plant and chlorofluorocarbons (CFC's) from air conditioning plant. This development will mitigate both almost completely via the following measures:

No.	Mitigation Measure
1	This development will have zero site NOx emissions as all heating will be provided by air source heat pumps which will run from grid supplied electricity.
2	All comfort cooling will use the latest R32 refrigerants in hermetically sealed systems. Pollutants from such systems should be zero.
3	Other less significant pollutants can arise from fumes from metal and other building materials. These will be mitigated as much as conceivably possible as all materials will be chosen based on their environmental credentials which will come under the development's commitment to BREEAM.

Table 07: Schedule of operational mitigation measures

8.02 Transport Emissions

A travel assessment has been prepared to analyse travel patterns to assess the impact in highway and transportation terms, of the proposed development. Although it is unavoidable the development will result in an increase in inhabitant travel the following mitigation measures are in place to reduce air pollutants from increased travel as much as possible:

No.	Mitigation Measure
1	The site is intended to be car free, with no parking provided for inhabitant's personal vehicles, thus mitigating pollutants from personal vehicle travel.
2	Any spaces will be for deliveries. These will be in line with the BREEAM requirements for electric vehicle charging, which of course are zero emission vehicles.
3	The site will follow the London Plan protocols for cycling facilities, encouraging bicycle use over cars and public transport.
4	The current public transport facilities are already sufficient to house the predicted additional residents, which will be minimal regardless, therefore no additional services that would increase air pollutants are required.
5	There are several Zipcar and Enterprise Car Club car sharing locations within the vicinity of this development (less than 500m).
6	The proposed commercial spaces are intended for local and new residents likely resulting in many trips being walked. The need to travel long distances for food and beverage consumption is unlikely to be a factor with very few trips needing local highways and transport networks.

Table 08: Schedule of transport mitigation measures

With the above implemented it is unlikely the increased residents will result in any significant increase in car trips and will likely cause negligible impact on current transport emissions.

8.03 Protecting New Residents

The inhabitants of the proposed building itself will also require mitigation measures to combat the local air pollution. The following mitigation measures will be implemented on site:

No.	Mitigation Measure
1	The whole building will be mechanically ventilated. In spaces located close to road networks windows cannot be relied upon for sufficient ventilation due to acoustic reasons. In said spaces mechanical vent heat recovery (MVHR) will only be located at least 10m from pollutant sources, including ventilation exhausts.
2	All MVHR systems will be designed in accordance with BS EN 16798:2017 *Energy Performance of Buildings*, and BS EN ISO 16890:2016 *Air Filters for General Ventilation*.
3	Air intakes will be located where outdoor air is least polluted (i.e., away from local road networks where possible).
4	Filtration systems and air cleaning measures will be applied where air pollution concentrations are significant.
5	Facilities management teams will record and store air filtration maintenance on all applicable devices including evidence they have been properly maintained.

Table 09: Schedule of filtration mitigation measures

9.0 CONCLUSIONS

This analysis found the following conclusions:

- Current air quality: Current receptors in the local area show that NO_2 and particulate levels have been historically high in this area, with slight reductions in the last few years, likely due to COVID 19 restrictions. Particularly high levels of pollutants are concentrated to roads.

- Construction site impacts: considering the built-up area of construction and very local existing inhabitants, some disruption to air quality most likely through dust and particulates, is impossible to avoid. However, the contractor will be held to this plan's 55 point site management mitigation strategy (Section 7.03) which contains strategies for sites to reduce "medium" risk to air quality.

- Operational impacts: The site will have zero NOX emissions due to its grid supplied electricity heat pump system and natural ventilation strategy. It will also have extensive cyclist facilities and be car free discouraging inhabitants from using personal vehicles. All mechanical ventilation systems on site will have appropriate filtration systems on intakes to protect inhabitants from local air pollution.

- Improving air quality: The site is all hardscape with no ecological value at all. The site will not increase hardscape at all and will be adding a green/sedum roof to increase ecological value.