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Date: 25th August 2022
Reference: 4556-1p1

Dear John,

**BRILL PLACE, CAMDEN - AIR QUALITY CONSULTANCY SERVICES FEE PROPOSAL**

Further to your recent enquiry, I am pleased to provide the following proposal for air quality consultancy services in support of a residential development on land off Brill Place, Camden.

Planning consent for the construction of a 22-storey apartment block on land off Brill Place was granted by London Borough of Camden (LBoC) on 14th October 2016, subject to a number of conditions. These include the following in relation to air quality:

> "External Air Quality Monitoring and Alert System - Plot 7
>
> Prior to occupation of residential units on floors 14 and below, evidence that an appropriate $NO_2$ and $PM_{2.5}$ real time monitoring system, has been installed, a detailed mechanism to secure maintenance of this system is in place and a system to manage alerts to residents has been established. These should be submitted to the Local Planning Authority and approved in writing. Thereafter the number of alerts to residents should be reported quarterly to the Local Planning Authority and access to data provided on request.
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> Installation should not take place until:
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> a. Full details of the specification of the air quality monitors, with a high level of accuracy with a maximum Root Mean Square Error of 10ug/$m^3$ for both $NO_2$ and

$PM_{2.5}$, have been submitted to and approved by the local planning authority in writing.

b. The location and number of monitors, including evidence that at least 2 monitors will be installed on the building at the corner of Brill Place and Purchese Street at ground and 14th floor levels, and at least 1 monitor will be installed on the building at the NE corner (nearest St. Pancras International station) at 7th floor level, and with all monitors to have a 270° free flow of air but avoiding any wind tunnels, have been submitted to and approved by the local planning authority in writing.

c. Details of the alert system to residents, if a level of 40µg/m3 of $NO_2$ or a 25 µg/m3 of $PM_{2.5}$ is breached (as a one-hour average), if there is a 'medium', 'high' or 'very-high' pollution event warning from the LAQN, or black start event at the Francis Crick Institute (including routine generator testing), have been submitted to and approved by the local planning authority in writing.

d. A detailed mechanism to secure calibration and maintenance of this system in accordance with manufacturer recommendations has been submitted to and approved by the local planning authority in writing.

Reason: To protect the amenity of residents in accordance with London Borough of Camden Local Plan Policy CC4 and London Plan policy 7.14."

An Air Quality Monitoring Plan was produced by Redmore Environmental in order to address the condition. Following submission, a number of comments were received from LBoC in relation to the proposed sampling and alert communication systems. The majority of comments were subsequently addressed through email correspondence between LBoC, Redmore Environmental and Henry Construction Projects. However, LBoC have requested that an alternative alert communication system is provided in order to address the condition. As such, the following services are required:

- Service 1: Consultation with LBoC to confirm the acceptability of an alternative alert communication system which can be developed and identify any residual matters which require resolution in order to discharge the condition; and,
- Service 2: Air Quality Monitoring in order to address the operational phase requirements of the condition.

The following text outlines our proposed approach to providing the stated services and associated fees.

## Outline Approach

### Service 1: Consultation

Consultation with the environmental health department at LBoC will be undertaken in order to confirm the acceptability of a WhatsApp Messenger Alert Integration System which can be developed by Earthsense to allow communication of trigger level exceedences to the mobile phones of residents at the development. Further details of the proposed system and how this will integrate into the Air Quality Monitoring is provided under Service 2.

Any other residual matters which require resolution will also be discussed and where possible agreed with LBoC. If required, an updated Air Quality Monitoring Plan will be prepared in order to formalise the changes to the proposed monitoring and alert systems and fully address the requirements of the condition.

### Service 2: Air Quality Monitoring

Monitoring Locations

In accordance with the planning condition, Air Quality Monitoring will be undertaken at three separate locations. These are summarised as follows:

- On the building at the corner of Brill Place and Purchese Street at ground floor level;
- On the building at the corner of Brill Place and Purchese Street at the base of 15th floor level; and,
- On the building at the north-east corner (nearest St. Pancras International Station) at 7th floor level.

An initial site visit will be undertaken in order to determine the specific sampling positions. Further consultation with the client and LBoC will then be carried out in order to confirm the acceptability of the proposed locations.

Pollutants and Air Quality Monitoring Systems

In accordance with the planning condition, assessment of the following species will be undertaken at the selected monitoring locations:

- Nitrogen dioxide ($NO_2$); and,
- Particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$).

The monitoring will be undertaken using Earthsense Zephyr air quality samplers. These instruments use electrochemical sensor technology to measure ambient $NO_2$ concentrations. $PM_{2.5}$ is measured using light-scattering optical particle counters.

The monitors will be configured to measure $NO_2$ and $PM_{2.5}$ levels automatically at 10-second intervals and record real-time atmospheric concentrations every 15-minutes.

The devices feature internal data loggers and cellular GPS connections which allow access to real-time air quality measurements and analysis tools. A summary of the technical parameters for the monitors is provided in Table 1.

**Table 1 Earthsense Zephyr Technical Parameters**

| Parameter | Pollutant | Units | Range |
|---|---|---|---|
| Measurement Range | $NO_2$ | µg/m$^3$ | 0 to 20,000 |
| | $PM_{2.5}$ | µg/m$^3$ | 0 to 20,000 |

A summary of the performance parameters for the monitors is provided in Table 2.

**Table 2 Earthsense Zephyr Performance Parameters**

| Parameter | Pollutant | Accuracy | Root Mean Square Error |
|---|---|---|---|
| Performance | $NO_2$ | +/- 5µg/m$^3$ | <10µg/m$^3$ |
| | $PM_{2.5}$ | +/- 5µg/m$^3$ | <10µg/m$^3$ |

As shown in Table 2, the Root Mean Square Error (RMSE) for the monitors is less 10µg/m$^3$, as required by the planning condition. A full technical specification for the system was provided to LBoC as part of the Air Quality Monitoring Plan.

Prior to deployment of the monitors on site, the systems will be tested to provide verification of sensor readings and to determine any adjustments required to optimise the accuracy of measurement data. Following completion of system verification, installation of the monitors at the selected sampling locations will be undertaken by trained technicians provided by Earthsense and Redmore Environmental.

Maintenance and Calibration

Site visits will be undertaken on a 6-monthly basis in order to complete visual inspection of the monitors and carry out any maintenance work required. All visits will be undertaken by a trained technician provided by Redmore Environmental.

In accordance with the manufacturer's specification for the equipment, routine replacement of the sensors installed within the monitors with equivalent units pre-calibrated against MCERTS certified reference analysers, will be undertaken at 18 to 24-month intervals. The specific schedule for sensor replacement will be confirmed following installation of the systems and statistical analysis of data captured over the first 17-months of monitoring by Earthsense.

It should be noted that the monitoring network operated by Earthsense is reviewed daily in order to determine the analog output from the raw sensors, the effects of temperature/ humidity that can cause cross-interference and the comparability of results against the national real-time air quality model (MappAir) which is operated by the company. In the event that this process indicates that interim sensor replacement is required, a site visit will be undertaken by trained technician in order to complete the relevant works.

Alert System

Each monitor will feature a WhatsApp Messenger Alert Integration System which will be developed and maintained by Earthsense. In accordance with the planning condition, this will enable each sampler to be configured to allow remote communication of exceedences of the following trigger level parameters:

- $NO_2$ concentration of 40µg/$m^3$ averaged over a 1-hour period; and,
- $PM_{2.5}$ concentration of 25µg/$m^3$ averaged over a 1-hour period.

In the event of a trigger level exceedence at any of the monitoring locations, an SMS notification will be issued to a central phone number maintained by Earthsense. This will feature an automatic forwarding system to a WhatsApp Messenger group in order to allow forward communication of notifications to mobile phones of residents at the development. The notifications will comprise a message indicating that the monitors are recording elevated pollution levels and that appropriate action should be undertaken. Following decrease of pollutant concentrations to below the relevant trigger levels, a secondary notification will be provided to residents informing them of the change.

The specific notification text and recommended actions in the event of trigger level exceedences will be determined following consultation with LBoC.

It should be noted that for the purpose of this proposal it has been assumed that the Building Management Team will be responsible for communicating subscription instructions for the WhatsApp Messenger Alert Integration System to all residents.

In addition to the above, Redmore Environmental Ltd will operate a central email account which will maintain subscription to the London Air Quality Network (LAQN) service. This will feature an automatic forwarding system in order to allow daily communication of pollution forecasts to the residents via email and notification if there is a 'medium', 'high' or 'very-high' pollution event warning, as required by the planning condition.

It is understood that the nearby Francis Crick Institute (FCI) includes a number of Combined Heat and Power (CHP) units, as well as backup generators. The planning condition indicates that there is a requirement for notification to the residents of any black start or testing events associated with the plant. Procedures for the notification of unplanned and planned black start events have already been defined within the FCI Neighbourhood Management Plan. The document outlines a number of actions that the Building Management Team of Brill Place are required to undertake in order to protect the amenity of all residents. The procedures outlined within the plan are considered to address the requirements of the planning condition. As such, no further actions will be undertaken by Redmore Environmental Ltd to notify residents of these events.

Reporting

In accordance with the requirements of the condition, a technical note will be prepared on a quarterly basis to confirm the number of trigger levels exceedences at each monitoring location This will be produced in a format suitable for submission to LBoC. Full access to the raw monitoring data will be provided to the Local Authority on request.

Summary of Services

A summary of the proposed Air Quality Monitoring services is provided as follows:

- An initial site visit to determine the specific locations for monitoring;
- Further consultation with LBoC in order to determine the acceptability of the proposed monitoring methods and communication systems;
- A site visit to undertake installation of the monitors;

- Site visits at 6-monthly intervals in order complete maintenance of the monitors;
- Replacement of sensors installed within the monitors with equivalent pre-calibrated units supplied by Earthsense at 18 to 24-month intervals;
- Setup of the WhatsApp Messenger Alert Integration System supplied by Earthsense;
- Server and data handling fees for the monitors; and,
- Preparation of technical notes on a quarterly basis to confirm the number of trigger level exceedences at each monitoring location.

**Project Team**

The project will be managed by Ger Parry, Associate Director at Redmore Environmental. Ger has over 13 years' experience within the environmental sector and has produced or project managed over 1,200 Air Quality Assessments for a range of developments and installations throughout the UK. He has extensive experience in the measurement and abatement of emissions, in addition to detailed knowledge of key air pollution policy, technical guidance and applied assessment methods.

The project will be managed by Olly Hanlon, Senior Air Quality Consultant at Redmore Environmental. Olly has managed a large number of Air Quality Monitoring projects and has specialist knowledge of a range of applied sampling methods and associated technical standards. He has worked on the design and delivery of bespoke monitoring programmes throughout the UK. These have been undertaken in support of focused investigate studies and compliance with relevant Health and Safety legislation.

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