

## Report

January 2018

### **Report for – UCLH Charity**

T3452– Middlesex Hospital Annex

Air Quality Baseline Monitoring Report to discharge condition 23 of planning permission 2017/0414/P

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## Document Version Control

Version	Date	Author	Reviewed by	Reviewed and Approved by
1.1	15 December 2017	Alexander Trotman	Robert Kennedy	
1.2	20 December 2017	Richard Lane	Mark Furlonger	
2.0	9 <sup>th</sup> January 2017	Alexander Trotman	Robert Kennedy	Mark Furlonger

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**Report for:**                    **Cathal Nicholas**  
                                      **Senior Project Leader**  
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## 1.0 Introduction

### 1.1 Project background

Temple Group Ltd (Temple) has been instructed by UCLH Charity to undertake baseline air quality monitoring in relation to condition 23 of planning permission 2014/0414/P. The works granted planning permission consist of the redevelopment of the site to provide a housing-led mixed-use scheme. Monitoring includes continuous dust monitoring using Osiris automatic monitors in the vicinity of the future demolition and construction sites.

This report provides the details of the assessment method used and a summary of the baseline air quality monitoring for the period: Tuesday 12 September to Tuesday 12 December 2017. It is submitted to the Council in order to discharge condition 23 of the relevant planning permission. Condition 23 reads:

*No development shall take place until full details of the air quality monitors have been submitted to and approved in writing by the local planning authority. Such details shall include the location, number and specification of the monitors, including evidence of the fact that they have been installed in line with guidance outlined in the GLA's Control of Dust and Emissions during Construction and Demolition Supplementary Planning Guidance and have been in place for 3 months prior to the proposed implementation date. The monitors shall be retained and maintained on site for the duration of the development in accordance with the details thus approved.*

*Reason: To safeguard the amenities of the adjoining premises and the area generally in accordance with the requirements of Policies A1, A4 and CC4 of the Camden Local Plan 2017.*

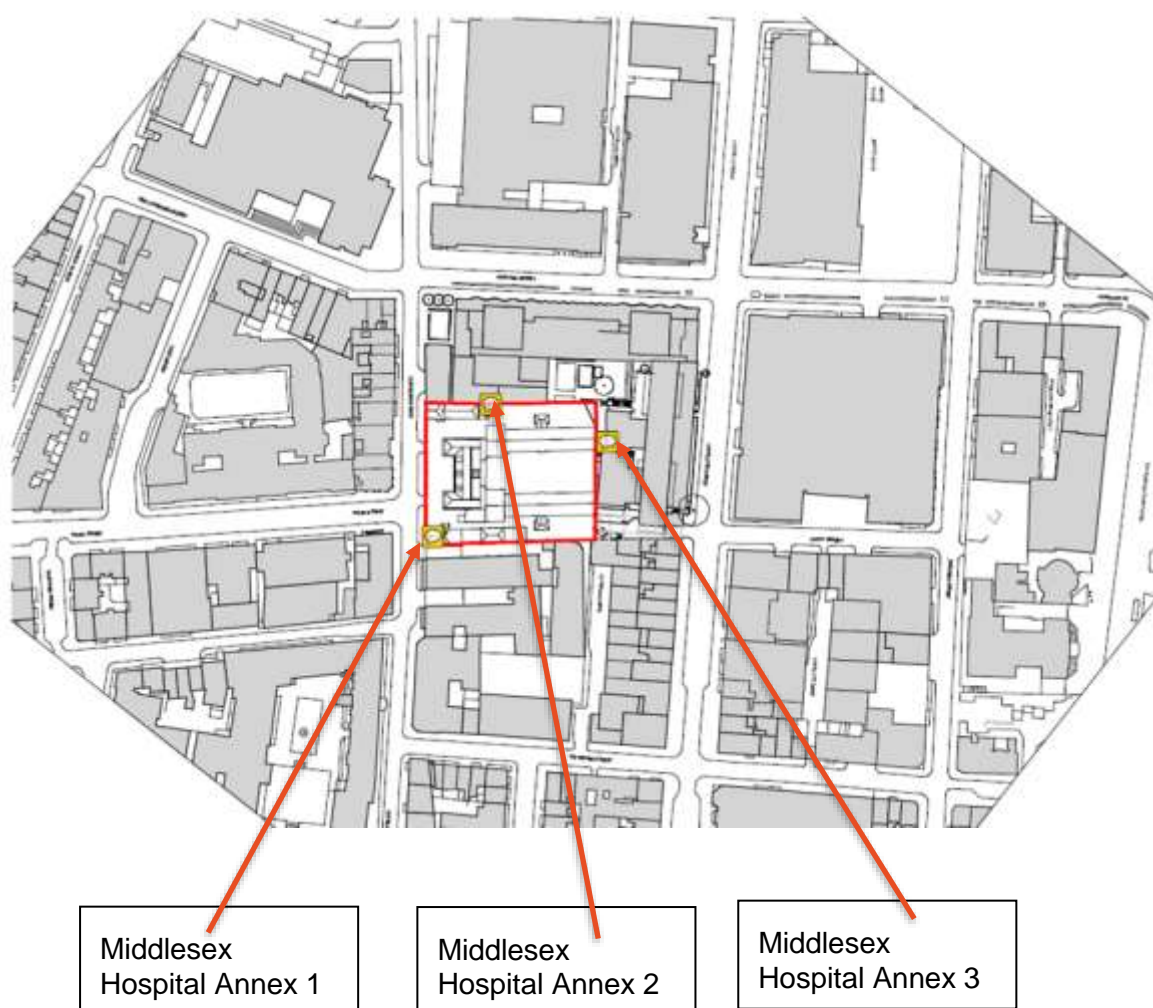
The positioning of the monitors for the purposes of baseline monitoring along with the types of monitors to be used were agreed in writing with Camden Council on 5<sup>th</sup> September 2017. The correspondence documenting this agreement can be found in **Appendix I**.

## 2.0 The site and its surroundings

Middlesex Hospital Annex is located on Cleveland Street in the London Borough of Camden. There are active construction sites located to the west, east and north of the site. To the west of the site on the other side of Cleveland Street are small shops and cafes. To the south and west are commercial businesses and residential properties. The Sainsbury Wellcome Centre research institute and the BT Tower are located to the north. To the east of the site, adjacent to the site, is the Astor College University College London halls of residence.

There is currently one entrance to the site located on Cleveland Street.

**Figure 1 Site map and monitoring locations**



## 3.0 Relevant guidance

### 3.1 GLA and London Councils

In 2014, The Greater London Authority (GLA) and London Councils produced, as part of the London Plan, *The Control of Dust and Emissions during Construction and Demolition* supplementary planning guidance (SPG)<sup>1</sup>. This guidance seeks to reduce emissions of dust from construction and demolition activities in London and identifies mitigation measures for a range of different sites. This guidance is widely referred to in assessments of construction impacts, in and outside London.

Within the SPG, Appendix 7: Air Quality Control states that a site preparation / maintenance mitigation measure for a construction site that has a medium / high risk of producing dust is to:

*“Where possible, commence baseline monitoring at least three months before phase begins”.*

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<sup>1</sup> Greater London Authority (2014), *The Control of Dust and Emissions during Construction and Demolition: Supplementary Planning Guidance*.

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## 4.0 Continuous dust monitoring

### 4.1 Locations

Baseline monitoring was carried out from 12 September 2017 to 12 December 2017 as part of the Middlesex Hospital Annex baseline PM<sub>10</sub> monitoring programme.

Three Osiris continuous monitors were installed for baseline monitoring:

- Middlesex Hospital Annex 1 - on the south west corner of the site attached to the brick wall (TNO3217).
- Middlesex Hospital Annex 2 - on the building, directly north of site (TNO3259).
- Middlesex Hospital Annex 3 - on the building, north east of site (TNO3260).

The monitoring locations can be seen in **Figure 1**. Photos of the monitoring sites can be seen in **Appendix II**.

### 4.2 Method for determining PM<sub>10</sub> concentration

Osiris airborne particulate monitors were used to record 15-minute average PM<sub>10</sub> concentrations. The Osiris operates by continuously drawing an air sample through a laser beam and sensor which uses the reflection of light off particles as they pass the laser, as a measure of particle size. The Osiris monitor is sensitive to airborne particulate concentrations, down to a fraction of one microgram per cubic metre. Certificates of calibration of the units have been included in **Appendix III**. No periodic maintenance of the equipment was required during the baseline monitoring period.

## 5.0 Results: PM<sub>10</sub> concentration (continuous monitoring)

**Table 1** summarises the baseline results from the Osiris at locations respectively for the time period 12 September 2017 to 12 December 2017.

**Table 1 PM<sub>10</sub> baseline monitoring summary**

UK PM <sub>10</sub> Air Quality Objective Levels					
Calendar year average concentration: 40 µg/m <sup>3</sup>					
One day (24 hours): 50 µg/m <sup>3</sup> , not exceeded more than 35 times a calendar year					
Location	Data Capture %	Average PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Maximum 15-minute PM <sub>10</sub> Concentration (µg/m <sup>3</sup> )	Number of days where 24 hour mean >50 ug/m <sup>3</sup>	Number of 250 µg/m <sup>3</sup> exceedences*
Middlesex Hospital Annex 1 TNO3217	100%	16.9	170.1	0	0
Middlesex Hospital Annex 2 TNO3259	100%	18.8	137.9	0	0
Middlesex Hospital Annex 3 TNO3260	100%	18.2	874.2	1	19

\*For information only – the 250 µg/m<sup>3</sup> trigger level will apply to the site once it becomes operational. During the baseline period, these exceedences were caused by sources other than the MHA worksite.

**Figure 2, Figure 3 and Figure 4** summarise the results from the Osiris monitors at locations 1, 2 and 3 respectively for the period 12 September 2017 to 12 December 2017.



Figure 2 PM<sub>10</sub> concentrations at Middlesex Hospital Annex 1

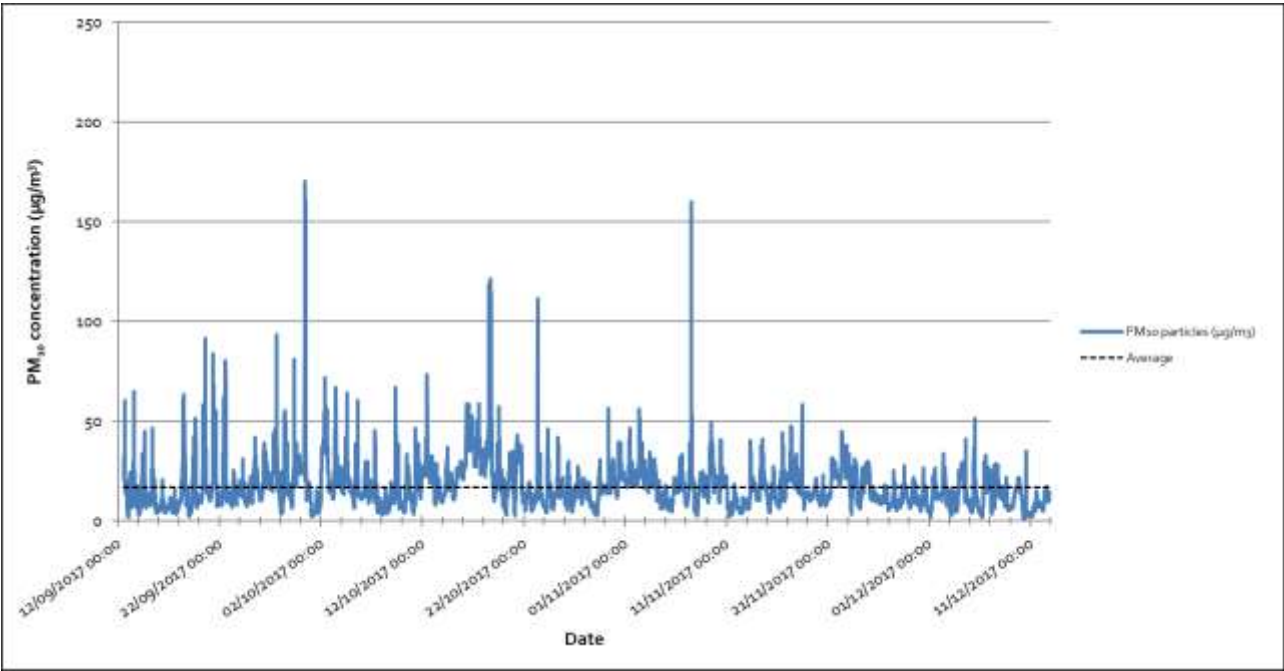


Figure 3 PM<sub>10</sub> concentrations at Middlesex Hospital Annex 2

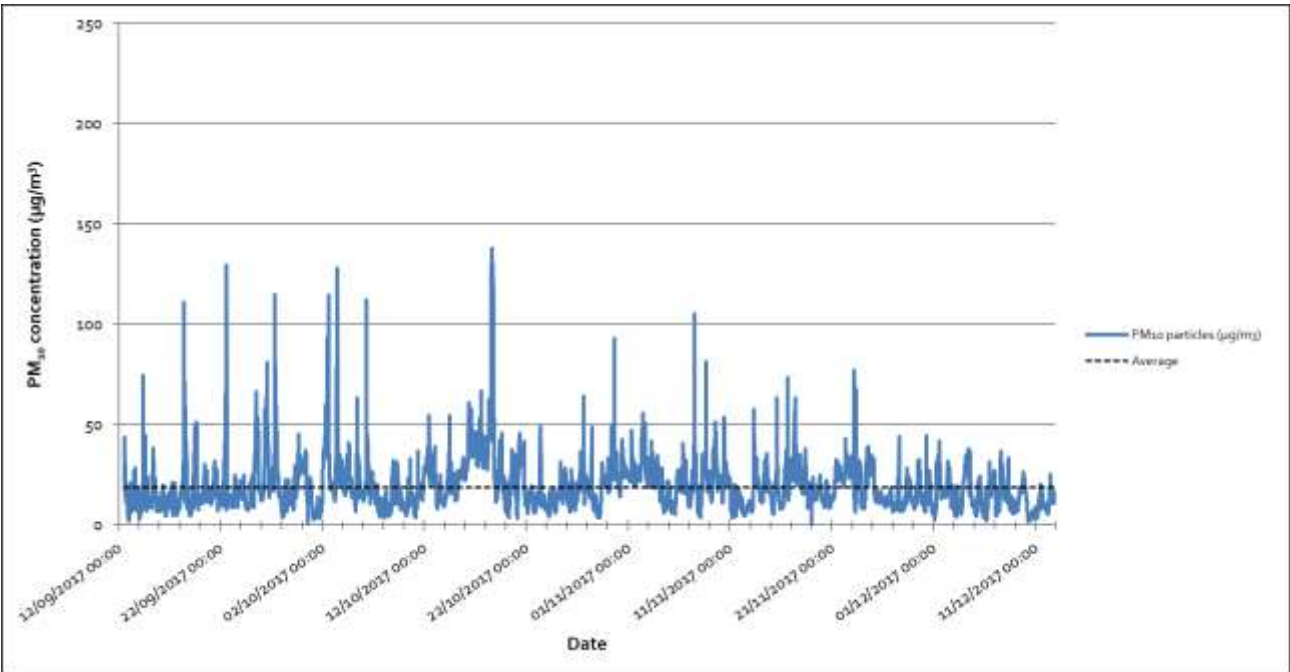
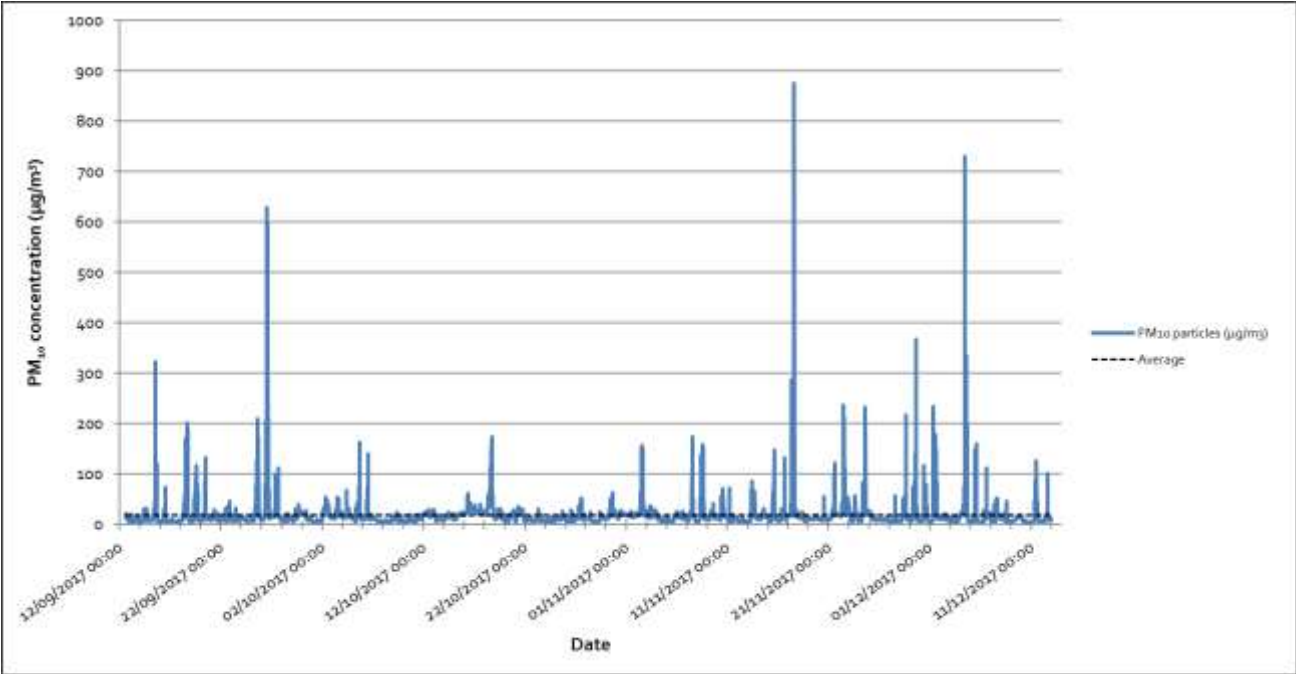


Figure 4 PM<sub>10</sub> concentrations at Middlesex Hospital Annex 3



## 6.0 Conclusion

UCLH Charity are preparing to undertake works at Middlesex Hospital Annex as part of the demolition of the vacant Hospital buildings and the construction of housing-led mixed-use development. Temple has been appointed to undertake air quality monitoring around the development. Continuous dust monitoring was undertaken to establish a PM<sub>10</sub> baseline for the site prior to commencement of the works.

Results from the first three months (12 September 2017 to 12 December 2017) of air quality baseline monitoring in the vicinity of the Middlesex Hospital Annex have determined the following:

- The PM<sub>10</sub> mean concentration over the monitoring period was 16.9 µg/m<sup>3</sup> at Middlesex Hospital Annex 1.
- The PM<sub>10</sub> mean concentration over the monitoring period was 18.8 µg/m<sup>3</sup> at Middlesex Hospital Annex 2.
- The PM<sub>10</sub> mean concentration over the monitoring period was 18.2 µg/m<sup>3</sup> at Middlesex Hospital Annex 3.

In order to maintain compliance with and to discharge condition 23 of the planning permission for the Middlesex Hospital Annex development, these three monitors will remain in-situ for the duration of the development. Should relocation be required for any of the monitors due to the works, the new locations will be agreed in writing with Camden Council.

## Appendix I – Approval of full details of air quality monitors from Camden Council

### Richard Lane

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**From:** Webber, Adam <Adam.Webber@camden.gov.uk>  
**Sent:** 05 September 2017 10:31  
**To:** Richard Lane; Lopez, Ana  
**Cc:** Mark Furlonger  
**Subject:** RE: Middlesex Hospital Annex - proposed air quality monitoring

Hi Richard,

Thanks for sending these through. These locations look acceptable, and I'm happy with the use of Osiris units.

Just to confirm, we'll be expecting trigger levels to be set according to the GLA's Controlling Dust and Emissions SPG, with a list of recipients to trigger alert emails large enough to ensure that there will always be someone on site to receive them, and a Camden email address.

Kind regards  
Adam

Adam Webber  
Senior Sustainability Officer (Air Quality)

Telephone: 020 7974 3901



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**From:** Richard Lane [mailto:richard.lane@templegroup.co.uk]  
**Sent:** 05 September 2017 10:18  
**To:** Lopez, Anna <Anna.Lopez@camden.gov.uk>  
**Cc:** Webber, Adam <Adam.Webber@camden.gov.uk>; Mark Furlonger <mark.furlonger@templegroup.co.uk>  
**Subject:** RE: Middlesex Hospital Annex - proposed air quality monitoring  
**Importance:** High

Hi Anna, Adam,

Please could you confirm if you are happy with the monitoring locations? We need to ensure agreement on what will be acceptable as part of the submission, when we come to discharge the condition.

Thanks,

Richard

**Richard Lane**  
Senior Consultant



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CONSTRUCTING  
EXCELLENCE  
in London and the South East  
**AWARDS 2017**  
PROUD SPONSOR

**20**  
YEARS

## Appendix II – Monitoring positions

Figure 5 Middlesex Hospital Annex 1



Figure 6 Middlesex Hospital Annex 2 (Behind Electrician)





**Figure 7 Middlesex Hospital Annex 3**



## Appendix III – Osiris monitors calibration certificates



### Dust Monitor Service/Calibration Certificate

Instrument Details		Calibration No: 11835	
Customer: Temple Group			
Instrument: Osiris	Serial Number: TNO3217	Software Version: 04.28	
Date of Last Service: 03/10/2016		Date Supplied New: N/A	

Calibration Factors prior to Servicing			
Measured Flow Rate: 590	cc/min	Total pump usage: 9048	hours
TSP: 1.0	PM10: 1.0	PM2.5: 1.0	PM1.0: 1.0
Inhalable: /	Thoracic: /	Respirable: /	PM2.0: /

<b>Fault Report:</b>
Routine Service & Re-calibration.

<b>Work Carried Out:</b>
Full Service & Re-calibration.
Charge battery <input checked="" type="checkbox"/> . Change reference filter <input checked="" type="checkbox"/> .
Photometer Scale 2700 Laser current 32 mA Flow rate 600 cc/min Stray light 0 mV
Wind inputs OK <input checked="" type="checkbox"/> External inputs OK <input checked="" type="checkbox"/> Inlet Heater OK <input checked="" type="checkbox"/> Alarm output OK <input checked="" type="checkbox"/>
Clean-Air filter OK <input checked="" type="checkbox"/> Backup-Filter OK <input checked="" type="checkbox"/> PC-Link OK <input checked="" type="checkbox"/> Telemetry OK <input checked="" type="checkbox"/>

<b>Parts Required:</b>
Pump, Battery, Balston Filter, Silencer, Piping & Filter Change.

Instrument Calibration against Reference Instrument				
reading is with new calibration factor applied				
Fraction	Zero	Reading	Reference	New Cal. Factor
TSP	0.0 $\mu\text{g}/\text{m}^3$	281.5 $\mu\text{g}/\text{m}^3$	276.0 $\mu\text{g}/\text{m}^3$	1
PM10	0.0 $\mu\text{g}/\text{m}^3$	247.9 $\mu\text{g}/\text{m}^3$	238.8 $\mu\text{g}/\text{m}^3$	1
PM2.5	0.00 $\mu\text{g}/\text{m}^3$	214.92 $\mu\text{g}/\text{m}^3$	212.99 $\mu\text{g}/\text{m}^3$	1
PM1.0	0.00 $\mu\text{g}/\text{m}^3$	119.35 $\mu\text{g}/\text{m}^3$	113.04 $\mu\text{g}/\text{m}^3$	1
Reference Instrument: TNO2126		Date Reference Calibrated: 02/03/17		

Signed: Terry Sandbach	Date: 15/08/2017	Temperature: 20.5 °C
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**Calibration Due: 15/08/2018**

QF031  
Issue 02  
Jan 2010

Turnkey Instruments Ltd  
1 Dalby Court, Gadbrook Business Centre, Northwich, Cheshire CW9 7TN  
Tel: 01606 330020 Fax: 01606 331526  
[www.turnkeyinstruments.com](http://www.turnkeyinstruments.com)



## Dust Monitor Service/Calibration Certificate

<b>Instrument Details</b>	<b>Calibration No:</b> 11836
<b>Customer:</b> Temple Group	
<b>Instrument:</b> Osiris	<b>Serial Number:</b> TNO3259
	<b>Software Version:</b> O4.28
<b>Date of Last Service:</b> 15/01/2016	<b>Date Supplied New:</b> N/A

Calibration Factors prior to Servicing			
<b>Measured Flow Rate:</b> 640 cc/min	<b>Total pump usage:</b> 2211 hours		
<b>TSP:</b> 1.0	<b>PM10:</b> 1.0	<b>PM2.5:</b> 1.0	<b>PM1.0:</b> 1.0
<b>Inhalable:</b> /	<b>Thoracic:</b> /	<b>Respirable:</b> /	<b>PM2.0:</b> /

<b>Fault Report:</b>
Routine Service & Re-calibration.

<b>Work Carried Out:</b>
Full Service & Re-calibration.
Charge battery <input checked="" type="checkbox"/> . Change reference filter <input checked="" type="checkbox"/> .
Photometer Scale 2630 Laser current 32 mA Flow rate 600 cc/min Stray light 0 mV
Wind inputs OK <input checked="" type="checkbox"/> External inputs OK <input checked="" type="checkbox"/> Inlet Heater OK <input checked="" type="checkbox"/> Alarm output OK <input checked="" type="checkbox"/>
Clean-Air filter OK <input checked="" type="checkbox"/> Backup-Filter OK <input checked="" type="checkbox"/> PC-Link OK <input checked="" type="checkbox"/> Telemetry OK <input checked="" type="checkbox"/>

<b>Parts Required:</b>
Battery, Balston Filter, Silencer, Piping & Filter Change.

Instrument Calibration against Reference Instrument				
reading is with new calibration factor applied				
Fraction	Zero	Reading	Reference	New Cal. Factor
TSP	0.0 µg/m <sup>3</sup>	279.0 µg/m <sup>3</sup>	276.0 µg/m <sup>3</sup>	1
PM10	0.0 µg/m <sup>3</sup>	251.1 µg/m <sup>3</sup>	238.8 µg/m <sup>3</sup>	1
PM2.5	0.00 µg/m <sup>3</sup>	226.76 µg/m <sup>3</sup>	212.99 µg/m <sup>3</sup>	1
PM1.0	0.00 µg/m <sup>3</sup>	116.61 µg/m <sup>3</sup>	113.04 µg/m <sup>3</sup>	1
Reference Instrument: TNO2126		Date Reference Calibrated: 02/03/17		

<b>Signed:</b> Terry Sandbach	<b>Date:</b> 15/08/2017	<b>Temperature:</b> 20.5 °C
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**Calibration Due: 15/08/2018**

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1 Dalby Court, Gadbrook Business Centre, Northwich, Cheshire CW9 7TN  
Tel: 01606 330020 Fax: 01606 331526  
www.turnkey-instruments.com





## Dust Monitor Service/Calibration Certificate

Instrument Details		Calibration No: 11837	
Customer: Temple Group			
Instrument: Osiris		Serial Number: TNO3260	Software Version: O4.28
Date of Last Service: 15/01/2016		Date Supplied New: N/A	

Calibration Factors prior to Servicing			
<b>Measured Flow Rate:</b> 590	cc/min	<b>Total pump usage:</b> 14	hours
<b>TSP:</b> 1.0	<b>PM10:</b> 1.0	<b>PM2.5:</b> 1.0	<b>PM1.0:</b> 1.0
<b>Inhalable:</b> /	<b>Thoracic:</b> /	<b>Respirable:</b> /	<b>PM2.0:</b> /

### Fault Report:

Routine Service & Re-calibration.

### Work Carried Out:

Full Service & Re-calibration.

Charge battery ☒. Change reference filter ☒.

<b>Photometer Scale</b> 2375	<b>Laser current</b> 34 mA	<b>Flow rate</b> 600 cc/min	<b>Stray light</b> 0 mV
<b>Wind inputs OK</b> <input checked="" type="checkbox"/>	<b>External inputs OK</b> <input checked="" type="checkbox"/>	<b>Inlet Heater OK</b> <input checked="" type="checkbox"/>	<b>Alarm output OK</b> <input checked="" type="checkbox"/>
<b>Clean-Air filter OK</b> <input checked="" type="checkbox"/>	<b>Backup-Filter OK</b> <input checked="" type="checkbox"/>	<b>PC-Link OK</b> <input checked="" type="checkbox"/>	<b>Telemetry OK</b> <input checked="" type="checkbox"/>

### Parts Required:

Battery, Balston Filter, Silencer, Piping & Filter Change.

Instrument Calibration against Reference Instrument				
reading is with new calibration factor applied				
Fraction	Zero	Reading	Reference	New Cal. Factor
TSP	0.0 µg/m <sup>3</sup>	276.1 µg/m <sup>3</sup>	276.0 µg/m <sup>3</sup>	1
PM10	0.0 µg/m <sup>3</sup>	247.5 µg/m <sup>3</sup>	238.8 µg/m <sup>3</sup>	1
PM2.5	0.00 µg/m <sup>3</sup>	223.38 µg/m <sup>3</sup>	212.99 µg/m <sup>3</sup>	1
PM1.0	0.00 µg/m <sup>3</sup>	116.18 µg/m <sup>3</sup>	113.04 µg/m <sup>3</sup>	1
<b>Reference Instrument:</b> TNO2126		<b>Date Reference Calibrated:</b> 02/03/17		

<b>Signed:</b> Terry Sandbach	<b>Date:</b> 15/08/2017	<b>Temperature:</b> 20.5 °C
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