



**Air Noise Environment**  
Environmental Monitoring and Assessment

# Independent Verification: Approval Condition E12

## New M5 WestConnex

**Date of Issue: 26 November 2019**

**Prepared by:  
Air Noise Environment**

**ABN: 13 081 834 513**





### Air

- Ambient Monitoring
- Auditing
- Computational Modelling
- Control Solutions
- Emission Inventories
- Expert Evidence
- Dust Assessment and Management
- Occupational Monitoring and Assessment
- Odour Monitoring and Assessment
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# DOCUMENT CONTROL SHEET

## Document Details

Project Reference: 5539-E12-Nov19-Report01.1.odt  
Document Title: Independent Verification: Approval Condition E12  
Client: New M5 WestConnex  
Document Reference: /Network/Projects/5539/Reporting/Condition E12/5539-E12-Nov19-Report01.1.odt

## Revision History

Version:	Issue Date:	Author:	Description:	Approved by:
00	18/11/19	[REDACTED]	Internal Draft	-
01	19/11/19	[REDACTED]	Final	[REDACTED]
02				
Revision:	Issue Date:	Author:	Details of Revision:	
01.1	26/11/19	[REDACTED]	Minor text updates	
01.2				
02.1				
02.2				

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The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Air Noise Environment Pty Ltd for the purposes of this project is both complete and accurate.





## Limitations of this Report

During the preparation of this audit report, Air Noise Environment has evaluated the monthly ambient air quality reports prepared by Ecotech for the New M5 project.

Air Noise Environment has reviewed the initial 6 months of ambient monitoring reports prepared by Ecotech. The June 2019 report was also selected for detailed review (appropriateness of data exclusion). With regards to the detailed review of data exclusion, the procedures adopted for the data validation and reporting by Ecotech for the June 2019 report are the same as for the previous five months. In our opinion, the sample of data reviewed is representative of the data processing procedures for the preceding months, hence provides a suitable verification approach for the 6 month dataset. Whilst the possibility of errors arising for other months of data cannot be entirely discounted, in our opinion the audit of the June 2019 data with respect to data exclusion provides a suitable approach for data verification for the first 6 months of ambient air quality data.

The conclusions outlined in this audit report are professional opinions based solely upon Air Noise Environment's review and audit of the monthly reports and the data provided by Ecotech.





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# 1 Introduction

## 1.1 Background

The Instrument of Approval (IoA) conditions governing the New M5 WestConnex Project are defined in the IoA document SSI 6788 dated 20 April 2016. The IoA includes a number of performance requirements relating to air quality, both in-tunnel and ambient. The project construction contractor, CPB Dragados Samsung Joint Venture, is contractually responsible for meeting some of these requirements through the design and construction of the tunnel on behalf of the Project proponent – NSW Roads and Maritime Services (RMS).

The approval conditions also require that the air quality monitoring methodologies and air quality outcomes as defined in the IoA document are subject to verification by an approved Independent person or organisation. Air Noise Environment Pty Ltd was nominated by RMS to undertake the role of independent specialist in accordance with the IoA for the WestConnex New M5 project.

As the approved independent specialist, Air Noise Environment will complete review and auditing of compliance with the following air quality related Approval conditions:

- Condition E3 — verification and compliance auditing for in-tunnel air quality monitoring;
- Condition E12 — independent audit of ambient air quality monitoring results;
- Condition E28 — review and, if appropriate, approve the quality assurance and quality control measures for ambient monitoring.

## 1.2 Scope of Work

This report presents the independent verification of conformance with the requirements of Approval Condition E12 relating to the independent audit of ambient air quality data. Condition E12 is copied below:

*'Condition E12*

*Monitoring results must be made publicly available and must be subject to an independent audit at six-monthly intervals (or at a longer interval, if approved by the Secretary). The auditor must be approved by the Secretary in consultation with the EPA and the AQCCC. The quality of the monitoring results must be assured through a NATA accredited process prior to the data being considered as a basis for compliance/auditing purposes.'*

The scope for this report is restricted to an audit of the initial 6 months of monitoring for the New M5 Project.

## 1.3 Audit Team

The data audit was performed and prepared by [REDACTED] (Senior Environmental Engineer,





BEng(Chem), Air Noise Environment Pty Ltd). [Redacted]

[Redacted]





## 2 Audit Methodology

The audit consisted of a desktop review of published ambient air monitoring reports, and analysis of the raw data and validated data provided by Ecotech. There are a total of 8 monitoring stations associated with the New M5 Project. These include:

- Arncliffe 1 (West Botany Street);
- Arncliffe 2 (Eve Street);
- Barton Park;
- Kingsgrove 1 (MOC1);
- Kingsgrove 2 (Kingsgrove Road);
- St Peters 1 (Campbell Street);
- St Peters 2 (SPI);
- St Peters 3 (St Peters St).

Ambient monitoring data has been published on the New M5 website since January 2019. The scope of this assessment is to review data presented in the first 6 months from January to June 2019, as listed below:

- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> January 2019 - 31<sup>st</sup> January 2019, Report No. DAT14256;
- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> February 2019 - 28<sup>th</sup> February 2019, Report No. DAT14370;
- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> March 2019 - 31<sup>st</sup> March 2019, Report No. DAT14459;
- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> April 2019 - 30<sup>th</sup> April 2019, Report No. DAT14559;
- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> May 2019 - 31<sup>st</sup> May 2019, Report No. DAT14671;
- Ecotech Ambient Air quality and Weather Monitoring Validated Report, New M5 Project 1<sup>st</sup> June 2019 - 30<sup>th</sup> June 2019, Report No. DAT14769;

In addition to the above, Ecotech has provided raw data<sup>1</sup> and validated data spreadsheets for each month of monitoring and for each station.

Ambient station monitoring data should be validated and verified in a consistent manner ensuring

1 It is noted that the raw data for Kingsgrove 1 from 1/1/19 to 7/3/19 and 23/4/19 – 30/6/19 for all parameters (except PM<sub>2.5</sub>) and for CO at St Peters 1 (all months) was not provided to ANE at the time of the analysis. All other data (both raw and validated data) was made available, and this is considered sufficient for verifying the procedures undertaken by Ecotech in their data analysis process.





the integrity of the reported data. Data reduction is the conversion of raw data into a more ordered, simplified, user-friendly form. For the New M5 monitoring stations, the data also needs to be summarised from collected 5 minute averages to hourly or daily (24 hourly) averages for reporting purposes. Data audits are a means to assure data integrity.

In completing the audit, a data audit trail was used to check for data recording/transfer errors. The data audit trail encompasses a check of data from the raw data through to the summarised validated date and ultimately presented in the report. Data is recorded by the analysers and instruments at the ambient monitoring stations at 5 minute intervals. The data is then validated and checked for errors and faults. Validated data is then converted to hourly and then 24 hourly averages which is presented in the final monthly report for each station. This audit has followed sections of raw data as downloaded from the ambient station instruments, through the validation process and then compares the calculated values determined from the raw data with the results of those reported by Ecotech in the monthly report. In summary, the following checks were made:

- accuracy of validated data compared to the raw data for January to June 2019 for all stations;
- appropriateness of data exclusion for 1 representative month (June 2019) for all stations;
- accuracy of conversion of 5-minute data to 1-hour and 24-hour averages; and
- reporting of exceedences.

The standards also specify the data and parameters required for the reporting of measured results. The reporting requirements include:

- Reference to the relevant monitoring standard;
- The reporting organisation or company;
- The concentration of the components measured in correct units (ppm or  $\mu\text{g}/\text{m}^3$ );
- The full scale value of the instruments;
- Sampling location—all relevant details, including a coordinate reference including height to within 100 m above ground level;
- The type of instrument;
- Any non-conformances with the standards;
- The uncertainty associated with the measurement along with the confidence interval and coverage factor;
- Any other relevant data, e.g. meteorological conditions.

The June 2019 report prepared by Ecotech has been checked against these requirements.





## 3 Audit Findings

### 3.1 Comparison of Raw Data

Raw data from each station for the period January to June 2019 was checked against the validated data Ecotech used for the reporting requirements. The raw data for each station was compared to the data presented in the validated Ecotech spreadsheet. 5 minute raw and validated data was provided for all parameters except for PM<sub>2.5</sub> and Sigma Theta. For PM<sub>2.5</sub>, sampled using the beta attenuation method, the last 10 minutes of each hour are a calibration cycle. Therefore, only one hour average data are provided for PM<sub>2.5</sub> as sub 1-hour data is not relevant. In the case of sigma theta, this is a calculated value determined from the wind directions for the measurements completed during the previous hour. Overall, the review has identified that the validated data used for reporting matched the raw data from the instrumentation for all months and at all stations.

A more detailed review of a representative month of monitoring (June 2019) was undertaken to confirm the appropriateness of data exclusions to derive the final validated data. This review considered the Valid Data Exception information provided in Section 3.3 of the Ecotech monitoring report.

The audit findings and comparison results of the raw data are shown in Tables 3.1 to 3.8 below.

Overall, the exclusion of data matched the details specified in the monitoring report. Data was excluded for various reasons including scheduled maintenance, instrument faults, data transmission errors and span/background checks. There were some short periods (usually single 5-minute periods) where data was excluded but a reason was not provided in the monitoring report. Ecotech was contacted regarding these periods to confirm the reasons for exclusion (e.g. usually data transmission errors or other instrument errors).





Table 3.1: Verification of Raw Data Compared to Validated Data – Arncliffe 1

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes.	Data excluded at 11:00 3/6/19 and 14:00 26/6/19 due to maintenance, as indicated in report. Data excluded at 16:00 13/6/19 due to instrument fault as indicated in report. A static offset of 5 µg/m <sup>3</sup> was observed as indicated in report from 12:00 3/6/19 to 00:00 1/7/19.
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes.	Data intermittently excluded from 10:10 – 16:40 on 3/6/19 due to maintenance as per report. Data excluded from 9:55-10:00 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	CO	Yes.	Daily background checks noted. Data intermittently excluded from 9:05 – 10:25 on 3/6/19 due to maintenance as per report. Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	NO	Yes.	Daily span and zero checks noted.
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes.	Data intermittently excluded from 9:05 – 10:25 on 3/6/19 as per report. Regular span and zero checks observed in data as per report.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes.	Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	WS	Yes.	Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	WD	Yes.	Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	DT @ 2 m	Yes.	Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.
01/06/2019 - 30/06/2019	DT @ 10 m	Yes.	Data excluded at 9:55 on 13/6/19, but no reason provided. Ecotech confirmed this was due to a data transmission error.

Table 3.2: Verification of Raw Data Compared to Validated Data – Arncliffe 2

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	Data excluded on 16:00 3/6/19 as per report due to scheduled maintenance. Data excluded at 11:00 13/6/19, but no reason provided in report (measured concentration appears reasonable). Ecotech has confirmed this was due to instrument error (beta count error). Data excluded from 19:00 to midnight 15/6/19 and intermittently on 16/6/19, due to intermittent instrument fault as indicated in report. Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.





Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes	Data excluded from 14:40-17:40 3/6/19 for scheduled maintenance as indicated in report. Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.
01/06/2019 - 30/06/2019	CO	Yes	Daily background checks noted. Data excluded at from 12:20 - 12:45 on 3/6/19, but no reason provided in report. This appears to be due to unrealistic negative values. Data excluded from 13:50-15:00 3/6/19 for scheduled maintenance as indicated in report. Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.
01/06/2019 - 30/06/2019	NO	Yes	Daily span and zero checks noted.
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes	Data excluded from 13:50-14:55 3/6/19 for scheduled maintenance as indicated in report.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes	Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.
01/06/2019 - 30/06/2019	WS	Yes	Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.
01/06/2019 - 30/06/2019	WD	Yes	Data excluded at 10:05 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion is due to data transmission errors.
01/06/2019 - 30/06/2019	DT @ 2 m	-	Raw data not provided for comparison.
01/06/2019 - 30/06/2019	DT @ 10 m	-	Raw data not provided for comparison.





Table 3.3: Verification of Raw Data Compared to Validated Data – Barton Park

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	Data excluded at 13:00-14:00 on 4/6/19 due to maintenance, as indicated in report.
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes	Data excluded from 13:00-14:00 on 4/6/19 due to maintenance, as per report. Data excluded at 15:05 on 4/6/19 but no reason provided in report. Ecotech confirmed that this was due to an instrument error. Data excluded at 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error. Data excluded from 10:30 25/6/19 to 11:45 26/6/19 due to maintenance as per report. A high proportion of large negative values were noted during this period.
01/06/2019 - 30/06/2019	CO	Yes	Daily background checks noted. Data excluded from 12:55-13:30 on 4/6/19 due to maintenance, as per report. Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.
01/06/2019 - 30/06/2019	NO	Yes	Daily span and zero checks noted. Data excluded from 12:55-13:30 on 4/6/19 due to maintenance, as per report.
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes	Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes	
01/06/2019 - 30/06/2019	WS	Yes	Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.
01/06/2019 - 30/06/2019	WD	Yes	Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.
01/06/2019 - 30/06/2019	DT @ 2 m	Yes	Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.
01/06/2019 - 30/06/2019	DT @ 10 m	Yes	Data excluded from 10:05-10:10 on 13/6/19 but no reason provided in report. Ecotech has confirmed that this was due to data transmission error.





Table 3.4: Verification of Raw Data Compared to Validated Data – Kingsgrove 1

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	Unrealistically high readings confirmed and noted intermittently. These were excluded as per report.
7/03/2019 - 31/03/2019	PM <sub>10</sub>	Yes	Data excluded from 19:05-19:35 on 14/3/19 due to 'intermittent unrealistic data' as per report. This data is noted to include negatives, some being significant. Data excluded for maintenance from 9:05-11:15 on 22/3/19 as indicated in report. Power outage from 7:55-8:10 on 27/3/19. Data excluded from 8:10-8:20 presumably for instrument stabilisation. Some zero values noted during this period.
7/03/2019 - 31/03/2019	CO	Yes.	Daily background checks noted. Intermittent data excluded as identified in report, due to data transmission error. Data excluded from 9:35-11:05 on 22/3/19 due to maintenance as indicated in report. Power outage from 7:55-8:10 on 27/3/19. Data excluded from 8:10-8:25 presumably for instrument stabilisation. Some zero values noted during this period.
7/03/2019 - 31/03/2019	NO	Yes.	Daily span and zero checks noted.
7/03/2019 - 31/03/2019	NO <sub>2</sub>	Yes.	Data excluded from 9:35 on 22/3/19 to 10:05 on 23/3/19 on 22/3/19 due to maintenance and instrument issues as indicated in report.
7/03/2019 - 31/03/2019	NO <sub>x</sub>	Yes.	Data excluded from 11:30-12:00 on 23/3/19 due to maintenance as indicated in report. Power outage from 7:55-8:10 on 27/3/19. Data excluded at 8:10 to allow for instrument stabilisation. Unrealistic negative data for NO <sub>2</sub> observed at 00:20 on 19/3/19 and 21:10 on 28/3/19. Data excluded as indicated in report. Where NO <sub>2</sub> is negative, NO and NO <sub>x</sub> data has also been removed.
7/03/2019 - 31/03/2019	WS	Yes.	All data accounted for.
7/03/2019 - 31/03/2019	WD	Yes	All data accounted for.
7/03/2019 - 31/03/2019	DT @ 2 m	Yes.	All data accounted for.
7/03/2019 - 31/03/2019	DT @ 10 m	Yes.	All data accounted for.
Note: As June raw data for Kingsgrove 1 was not provided at the time of the analysis (see Footnote 1, Page 9), data for the March period was reviewed			



Table 3.5: Verification of Raw Data Compared to Validated Data – Kingsgrove 2

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	Data excluded from 10:00-11:00 on 6/6/19 due to maintenance, as indicated in report.
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes	Data excluded from 10:05-12:15 on 6/6/19 due to maintenance as indicated in report. Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	CO	Yes	Daily background checks noted. Data excluded from 9:40-11:10 on 6/6/19 due to maintenance as indicated in report. Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	NO	Yes	Daily span and zero checks noted. Data excluded from 9:40-10:50 on 6/6/19 due to maintenance as indicated in report.
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes	Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes	
01/06/2019 - 30/06/2019	WS	Yes	Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	WD	Yes	Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	DT @ 2 m	Yes	Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.
01/06/2019 - 30/06/2019	DT @ 10 m	Yes	Data excluded from 15:05-15:10 11/6/19 and 9:25-9:30 on 30/6/19, due to data transmission error as indicated in report.







Table 3.6: Verification of Raw Data Compared to Validated Data – St Peters 1

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	<p>Power interruption from 9:00 – 11:35 on 3/6/19. No raw data for 9:00-10:00. Data for 10:00-11:00 is excluded to allow for instrument stabilisation.</p> <p>Data excluded at 1:00 4/6/19 due to data transmission as per report.</p> <p>Data excluded at 12:00 12/6/19 due to schedule maintenance as per report.</p>
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes	<p>Power outage from 9:55 – 10:50 on 3/6/19.</p> <p>Data excluded from 11:30-11:55 on 12/6/19 due to maintenance as indicated in report.</p> <p>Data excluded at 13:25 12/6/19 and 13:55-14:15 12/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion was due to instrument errors.</p> <p>Data excluded from 19:55-20:05 on 12/6/19. 1 value appears reasonable, other remaining two values are large negatives. Ecotech have confirmed that this exclusion was due to instrument errors.</p> <p>No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion was due to instrument errors.</p> <p>Data excluded from 3:45-4:15, 14:25 on 14/6/19, but no reason provided in report. Ecotech have confirmed that this exclusion was due to instrument errors.</p>
01/06/2019 - 30/06/2019	CO	-	No raw data provided.
01/06/2019 - 30/06/2019	NO	Yes	<p>Daily span and zero checks noted.</p> <p>Power outage from 9:55 – 10:50 on 3/6/19.</p> <p>Data excluded from 11:10-12:05 on 12/6/19 due to maintenance as indicated in report.</p>
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes	No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes	No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.
01/06/2019 - 30/06/2019	WS	Yes	<p>Power outage from 9:55 – 10:50 on 3/6/19.</p> <p>No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.</p>
01/06/2019 - 30/06/2019	WD	Yes	<p>Power outage from 9:55 – 10:50 on 3/6/19.</p> <p>No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.</p>
01/06/2019 - 30/06/2019	DT @ 2 m	Yes	<p>Power outage from 9:55 – 10:50 on 3/6/19.</p> <p>No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.</p>





Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	DT @ 10 m	Yes	<p>Power outage from 9:55 - 10:50 on 3/6/19.</p> <p>Data excluded for various sections during the month, but no reason provided in report. Ecotech confirmed this was due to a sensor cable communication issue.</p> <p>No raw data from 10:05-10:10 on 13/6/19, but no reason provided in report. Ecotech have confirmed that this is due to a logger time shift in the validated data.</p>





Table 3.7: Verification of Raw Data Compared to Validated Data – St Peters 2

Date	Parameter	Raw data matches validated data	Comments
01/06/2019 - 30/06/2019	PM <sub>2.5</sub>	Yes	Data excluded from 10:00-12:00 on 14/6/19 due to maintenance as indicated in report.
01/06/2019 - 30/06/2019	PM <sub>10</sub>	Yes	Intermittent data excluded from 10:00 to 12:15 14/6/19 due to maintenance as indicated in report.
01/06/2019 - 30/06/2019	CO	Yes	Daily background checks noted. Intermittent data excluded from 10:00 to 12:15 14/6/19 due to maintenance as indicated in report.
01/06/2019 - 30/06/2019	NO	Yes	Daily span and zero checks noted.
01/06/2019 - 30/06/2019	NO <sub>2</sub>	Yes	Intermittent data excluded from 10:00 to 12:15 14/6/19 due to maintenance as indicated in report.
01/06/2019 - 30/06/2019	NO <sub>x</sub>	Yes	
01/06/2019 - 30/06/2019	WS	Yes	All data accounted for.
01/06/2019 - 30/06/2019	WD	Yes	All data accounted for.
01/06/2019 - 30/06/2019	DT @ 2 m	Yes	All data accounted for.
01/06/2019 - 30/06/2019	DT @ 10 m	Yes	All data accounted for.



Table 3.8: Verification of Raw Data Compared to Validated Data – St Peters 3

Date	Parameter	Raw data matches validated data	Comments
01/06/2018 - 30/06/2018	PM <sub>2.5</sub>	Yes	Data excluded from 9:00 – 11:00 on 12/6/19 due to power interruption and instrument stabilisation as indicated in report. No data from 9:00-10:00 - data has been excluded from 11:00-12:00 due to instrument stabilisation.  Data excluded from 01:00-17:00 on 27/6/19 due to maintenance as indicated by report.
01/06/2018 - 30/06/2018	PM <sub>10</sub>	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00 - data has been excluded from 11:00-12:00 due to instrument stabilisation.  Data excluded from 12:45-13:40 on 12/6/19 due to maintenance as indicated in report.  Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	CO	Yes	Daily background checks noted.  Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00, data has been excluded from 11:00-12:00 due to instrument stabilisation (high proportion of negative values noted).  Data excluded from 7:25 to 14:30 11/6/19 due to instrument fault and subsequent maintenance.  Data excluded from 12:45-13:20 on 12/6/19 due to maintenance as indicated in report.  Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	NO	Yes	Daily span and zero checks noted.
01/06/2018 - 30/06/2018	NO <sub>2</sub>	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00 - data has been excluded from 11:00-12:00 due to instrument stabilisation (0 and negative values noted).
01/06/2018 - 30/06/2018	NO <sub>x</sub>	Yes	Data excluded from 12:45-13:15 on 12/6/19 due to maintenance as indicated in report.  Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	WS	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00.  Data excluded at 10:15 on 13/6/19, but no reason provided.





Date	Parameter	Raw data matches validated data	Comments
			Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	WD	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00. Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	DT @ 2 m	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00. Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.
01/06/2018 - 30/06/2018	DT @ 10 m	Yes	Data excluded from 9:50-11:00 due to power interruption and instrument stabilisation as indicated in report. No Data from 9:00-11:00. Data excluded at 10:15 on 13/6/19, but no reason provided. Ecotech confirmed data was excluded due to a data transmission error.

### 3.2 Calculation of 1-hour and 24-hour Averages

Calculations and checks were also performed by Air Noise Environment to verify the Ecotech calculations are correct when converting from 5 minute raw data averages to the reported hourly and 24 hourly averages. This is necessary as the data is downloaded from the instruments in 5 minute averages and converted into hourly averages and then 24 hourly averages for reporting. The exception to this is for the PM<sub>2.5</sub> data, where 1 hour data is provided.

Appendix B presents the results of the comparison for the 6 months of monitoring. The results are based on a % value (reported to nearest whole %), defined as the reported result vs the ANE calculated result. 100% indicates the reported and ANE results are identical. A value higher than 100% shows that the reported result was higher than the ANE results (and vice versa, lower than 100% shows that the reported results were lower). Minimum, maximum and average % values are shown.

Based on the outcomes presented in Appendix B, the reported 1-hour and 24-hour averages match the ANE calculated averages very closely. The only exception to this is for 24-hour average wind speed on 3 occasions over the whole 6 months where the reported values were 1.09-1.25 times higher than the ANE calculated values. For these data points, the actual m/s differences were very low in the order of 0.1 m/s.





### 3.3 Unrealistic and Noisy Data

On a number of occasions, Ecotech flagged raw data as unrealistic or noisy and subsequently removed the data from the analysis. For the period of June 2019, these data periods were reviewed to confirm the appropriateness of the data exclusion. In some cases, data was removed intermittently over a period of time – for these periods, example data sets were reviewed only.

In the majority of cases, the data that was removed was due to unrealistic negative values, and in the opinion of the reviewer, it is considered reasonable to remove such values prior to analysis. On some occasions, PM<sub>2.5</sub> 1-hour data showed an unusually high spike for a single 1-hour period, and concentrations were noted to be higher than PM<sub>10</sub> for these periods. Data was appropriately considered unrealistic in these instances.

### 3.4 Reporting of Exceedences

The Instrument of Approval (IoA) conditions governing the New M5 Project are defined in the IoA document SSI 6788 dated 20 April 2016. The Approval includes a number of performance requirements relating to Air Quality, both in-tunnel and ambient as well as limits.

Condition E14 lists the ambient air pollutants goals as follows:

- CO – 8 hour rolling average of 9.0 ppm (NEPM);
- NO<sub>2</sub> – One hour average of 0.12 ppm (245 µg/m<sup>3</sup>) (NEPM);
- PM<sub>10</sub> – 24 hour average of 50 µg/m<sup>3</sup> (NEPM);
- PM<sub>2.5</sub> – 24 hour average of 25 µg/m<sup>3</sup> (NEPM);
- PM<sub>10</sub> – annual average of 25 µg/m<sup>3</sup> (NEPM);
- PM<sub>2.5</sub> – annual average of 8 µg/m<sup>3</sup> (NEPM).

Ecotech has included a table in the monthly reports to highlight any exceedences that may occur above these goals. The Ecotech monthly reports clearly identify exceedences of the IoA criteria, and these are reproduced in Tables 3.9 to 3.16 below.

It is further noted that the number of reported exceedences match those detailed in the monitoring data spreadsheets provided by Ecotech, except for the month of June at Kingsgrove 1 monitoring station. While the calculation spreadsheets correctly reflect the measured PM<sub>2.5</sub> concentrations, an exceedence on the 9 June 2019 was not specified in the monitoring report summary table for Kingsgrove 1. The measured concentration was 27 µg/m<sup>3</sup> (slightly above the 25 µg/m<sup>3</sup> ambient air quality goal). It is however noted that the exceedence can be seen in the PM<sub>2.5</sub> 24-hour monitoring report graph.





Table 3.9: Arncliffe 1 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	-	-	-	-	-	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	27 - 29/4	33 - 21/5	25 - 8/6
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.

Table 3.10: Arncliffe 2 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	-	-	-	-	-	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	29 - 29/4	35 - 20/5 39 - 21/5 26 - 24/5	25 - 8/6
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.

Table 3.11: Barton Park - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	-	-	-	-	-	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	26 - 29/4	26 - 20/5 38 - 21/5 26 - 24/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.



Table 3.12: Kingsgrove 1 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	80.7 - 15/1 77.3 - 17/1 95.7 - 18/1 80.7 - 22/1 63.3 - 23/1 58.8 - 25/1 88.0 - 31/1	61.7 - 7/2 152.8 - 12/2 53.5 - 18/2	54.8 - 4/3 60.0 - 5/3 110.8 - 6/3 63.9 - 8/3 68.7 - 12/3 52.6 - 26/3 65.2 - 28/3 61.8 - 29/3	73.2 - 8/4 62.7 - 26/4 110.4 - 29/4 61.9 - 30/4	64.3 - 1/5 51.7 - 2/5 94.4 - 8/5 51.6 - 10/5 52.7 - 20/5 83.8 - 21/5 69.8 - 24/5 98.7 - 27/5 75.0 - 28/5 181.1 - 29/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	26 - 18/1 28 - 22/1	-	-	26 - 8/4 51 - 29/4	35 - 20/5 50 - 21/5 32 - 22/5 34 - 24/5 26 - 25/5	30 - 8/6 <b>27 - 9/6<sup>b</sup></b>
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.  
<sup>b</sup> Exceedence not detailed in monitoring report table of summary - Table 18 of Report No. DAT 14769

Table 3.13: Kingsgrove 2 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	-	-	-	-	75.3 - 27/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	37 - 29/4	41 - 21/5 26 - 22/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.





Table 3.14: St Peters 1 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	50.4 - 31/1	50.9 - 12/2 51.5 - 13/2 63.0 - 19/2	55.5 - 6/3 52.6 - 11/3	54.9 - 29/4	70.8 - 17/5 67.0 - 20/5 54.9 - 21/5 507 - 22/5 69.8 - 24/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	37 - 29/4	27 - 20/5 35 - 21/5 31 - 22/5 30 - 24/5	27 - 9/6
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.

Table 3.15: St Peters 2 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	63.3 - 5/1 60.3 - 15/1 58.7 - 16/1 64.2 - 17/1 65.3 - 18/1 53.7 - 22/1 63.2 - 23/1 61.1 - 25/1 82.0 - 31/1	50.8 - 11/2 90.9 - 12/2 52.5 - 13/2 56.1 - 14/2 89.6 - 18/2 65.7 - 19/2 58.4 - 26/2 76.0 - 27/2	59.5 - 4/3 56.2 - 5/3 79.5 - 6/3 72.4 - 8/3 51.5 - 11/3 63.5 - 12/3 64.0 - 26/3 53.7 - 27/3 55.6 - 29/3	55.1 4/4 88.9 - 8/4 66.9 - 9/4 57.2 - 29/4	59.9 - 6/5 60.3 - 7/5 74.6 - 8/5 52.5 - 10/5 72.9 - 15/5 74.7 - 16/5 65.2 - 17/5 58.4 - 20/5 87.4 - 21/5 86.6 - 22/5 80.8 - 23/5 120.7 - 24/5 95.3 - 27/5	96.8 - 11/6 58.7 - 12/6 67.5 - 14/6
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	38 - 29/4	28 - 20/5 41 - 21/5 32 - 22/5 38 - 24/5	-
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.



Table 3.16: St Peters 3 - Exceedences for January to June 2019

Parameter	Averaging Time	January	February	March	April	May	June
NO <sub>2</sub> (ppm)	1 Hour	-	-	-	-	-	-
CO (ppm)	1 Hour	-	-	-	-	-	-
PM <sub>10</sub> (µg/m <sup>3</sup> )	24 hour	54.9 – 31/1	-	-	-	-	-
	Annual <sup>a</sup>	-	-	-	-	-	-
PM <sub>2.5</sub> (µg/m <sup>3</sup> )	24 Hour	-	-	-	37 – 29/4	35 – 21/5 30 – 22/5 28 – 24/5	31 – 9/6
	Annual <sup>a</sup>	-	-	-	-	-	-

<sup>a</sup> Insufficient data to report annual average, any exceedences will be reported in January 2020.

### 3.5 Reporting Requirements

For each parameter sampled, the relevant Australian Standard defines specific reporting requirements for the way data is reported and presented. The June 2019 Ecotech reports have been reviewed and comparison to the reporting requirements is presented in Table 3.17 below. Based on the analysis presented in Table 3.17, the Ecotech reports comply with the reporting requirements

Table 3.17: Compliance With Required Reporting Details as Listed in the Relevant Australian Standards

Reporting Requirements	Report Compliance
Reference to the relevant Standard	The relevant standard for each parameter is noted in Table 3 of the report
The reporting organisation or company address and certification details.	Details of Ecotech are included in the report. The NATA certification number is also included.
The concentration of the components measured in correct units (ppm or µg/m <sup>3</sup> )	The concentrations of the components are correctly labelled in the report. NO <sub>2</sub> and CO are reported as ppm. PM <sub>10</sub> and PM <sub>2.5</sub> are correct reported as µg/m <sup>3</sup> .
The dates, time and period of sampling	The sampling dates and times and period identified in the report in the various results tables tables and graphs. (Figures 2 – 11 and Tables 15 – 23). Consideration to the averaging period is also included when referencing the air quality goals in Table 4.
The full scale value of the instruments.	This information is provided in Table 5.
Sampling location—all relevant details, including a coordinate reference including height to within 100 m above ground level and classification of area .	Site sampling name, geographical location and height above sea level is included in the report in Table 1.
The type of instrument.	The instrument types and brands are detailed in Table 2
Any non-conformances with the standards.	Details referred to in Section 2.3.1 of report.
The uncertainty associated with the measurement along with the confidence interval and coverage factor.	The measurement uncertainties are detailed for each parameter in Table 5.



## 4 Conclusions

The monthly ambient air quality reports for the period January to June 2019 have been reviewed, and the June 2019 report selected for detailed review (appropriateness of data exclusion). The procedures adopted for the data validation and reporting by Ecotech for the June 2019 report are the same as for the previous five months. In our opinion, the sample of data reviewed is representative of the data processing procedures for the preceding months, hence provides a suitable verification approach for the 6 month dataset.

Overall, the raw data from 1 June to 1 July 2019 matched the validated data. Furthermore, the calculation procedures for converting 5-minute average data to 1-hour and 24-hour average data are considered accurate. In terms of the detailed review of June 2019, the data exception details provided in the monitoring report matched the raw data analysis very closely. It is noted that clarification has been sought from Ecotech regarding exclusion of a small number of data points for which the monitoring reports do not provide information on. Ecotech has confirmed the reasons data exclusion for these periods (usually instrument faults or data transmission errors).

The data results were also compared to the compliance limits for the project. The results show full compliance for carbon monoxide (CO) and nitrogen dioxide (NO<sub>2</sub>) for the 6 month period. Exceedences for the 24 hour PM<sub>10</sub> and PM<sub>2.5</sub> were noted on occasions over the 6 month period. The Ecotech reports accurately report the periods of exceedence as reflected in the analysed data, except on one occasion in the June 2019 report (i.e. Kingsgrove 1 station, 1 exceedence reported (8/6/19) instead of 2 exceedences (8/6 and 9/6)). It is recommended that this report be updated for re-submission to the public website.

The reporting of the ambient air quality monitoring data complied with the relevant requirements.





# Appendix A - Air Quality Glossary





## APPENDIX B: GLOSSARY OF AIR QUALITY TERMINOLOGY

Conversion of ppm to mg/m <sup>3</sup>	Where R is the ideal gas constant; T, the temperature in kelvin (273.16 + T°C); and P, the pressure in mm Hg, the conversion is as follows: $\text{mg m}^{-3} = (P/RT) \times \text{Molecular weight} \times (\text{concentration in ppm})$ $= \frac{P \times \text{Molecular weight} \times (\text{concentration in ppm})}{62.4 \times (273.2 + T^{\circ}\text{C})}$
g/s	Grams per second
mg/m <sup>3</sup>	Milligrams (10 <sup>-3</sup> ) per cubic metre.
µg/m <sup>3</sup>	Micrograms (10 <sup>-6</sup> ) per cubic metre.
ppb	Parts per billion.
ppm	Parts per million.
PM <sub>10</sub> , PM <sub>2.5</sub> , PM <sub>1</sub>	Fine particulate matter with an equivalent aerodynamic diameter of less than 10, 2.5 or 1 micrometres respectively. Fine particulates are predominantly sourced from combustion processes. Vehicle emissions are a key source in urban environments.
50th percentile	The value exceeded for 50 % of the time.
NO <sub>x</sub>	Oxides of nitrogen – a suite of gaseous contaminants that are emitted from road vehicles and other sources. Some of the compounds can react in the atmosphere and, in the presence of other contaminants, convert to different compounds (eg, NO to NO <sub>2</sub> ).
VOC	Volatile Organic Compounds. These compounds can be both toxic and odorous.





# Appendix B – Calculation Comparison





Table B1: Comparison of ANE and Ecotech Calculations - Arncliffe 1 (West Botany Street) - 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	101%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B2: Comparison of ANE and Ecotech Calculations - Arncliffe 1 (West Botany Street) - 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	101%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table B3: Comparison of ANE and Ecotech Calculations - Arncliffe 2 (Eve Street) - 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B4: Comparison of ANE and Ecotech Calculations - Arncliffe 2 (Eve Street) - 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	<b>101%</b>	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%







Table B5: Comparison of ANE and Ecotech Calculations – Barton Park – 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B6: Comparison of ANE and Ecotech Calculations – Barton Park – 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	<b>109%</b>	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%





Table B7: Comparison of ANE and Ecotech Calculations – Kingsgrove 1 (MOC1) – 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B8: Comparison of ANE and Ecotech Calculations – Kingsgrove 1 (MOC1) – 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	<b>101%</b>	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	<b>98%</b>	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	<b>101%</b>	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	<b>98%</b>	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	102%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table B9: Comparison of ANE and Ecotech Calculations - Kingsgrove 2 (Kingsgrove Rd) - 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B10: Comparison of ANE and Ecotech Calculations - Kingsgrove 2 (Kingsgrove Rd) - 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	101%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	101%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table B11: Comparison of ANE and Ecotech Calculations – St Peter 1 (Campbell St) – 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	110%	102%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B12: Comparison of ANE and Ecotech Calculations – St Peter 1 (Campbell St) – 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NOx (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	101%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%





Table B13: Comparison of ANE and Ecotech Calculations – St Peter 2 (SPI) – 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B14: Comparison of ANE and Ecotech Calculations – St Peter 2 (SPI) – 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	<b>112%</b>	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	<b>101%</b>	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	<b>125%</b>	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%



Table B15: Comparison of ANE and Ecotech Calculations – St Peter 3 (St Peters St) – 1 hr Averages

Month	Para-meter	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	CO 8 Hr Rolling (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table B16: Comparison of ANE and Ecotech Calculations – St Peter 3 (St Peters St) – 24 hr Averages

Month	Para-meter	PM <sub>2.5</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	CO (ppm)	NO (ppm)	NO <sub>2</sub> (ppm)	NO <sub>x</sub> (ppm)	WS (m/s)	WD (°)	Sigma (°)	AT 2m (K)	AT 10m (K)
Jan	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	101%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Feb	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Mar	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Apr	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
May	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
June	Avg	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Max	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
	Min	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%