

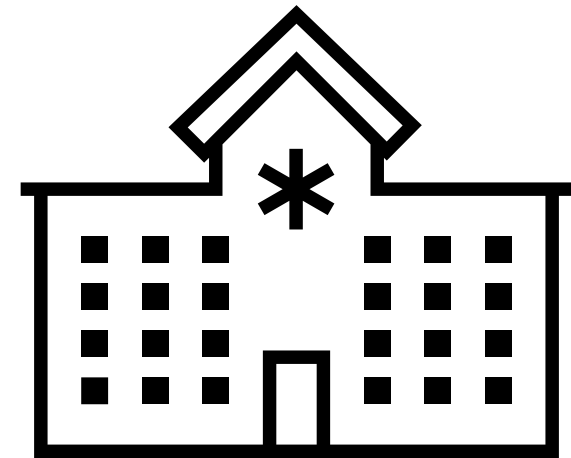
# Air Quality Data at the Royal Victoria Infirmary (RVI) Newcastle upon Tyne

**Clean Air Day Lunch Hour Meeting**

By

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# THE UK'S CAHF: THE ROLE OF HOSPITALS AS ANCHOR INSTITUTIONS IN ACHIEVING IMPROVED AIR QUALITY WITHIN THE COMMUNITIES THEY SERVE

## Data Source Introduction

The Clean Air Hospital Framework (CAHF) was developed by the Great Ormond Street Hospital and the Global Action Plan, an environmental charity in the UK to support achievement of clean air environment within the hospital and within the wider community.

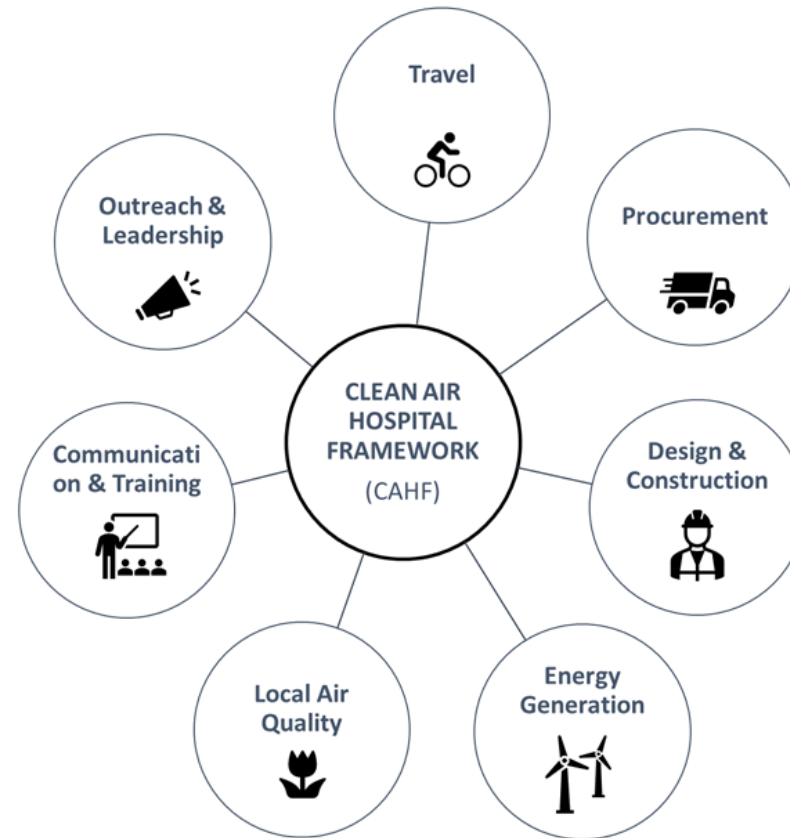


Figure 1 - The Clean Air Hospital Framework showing all 7 focus areas under the framework

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## Publicly available data

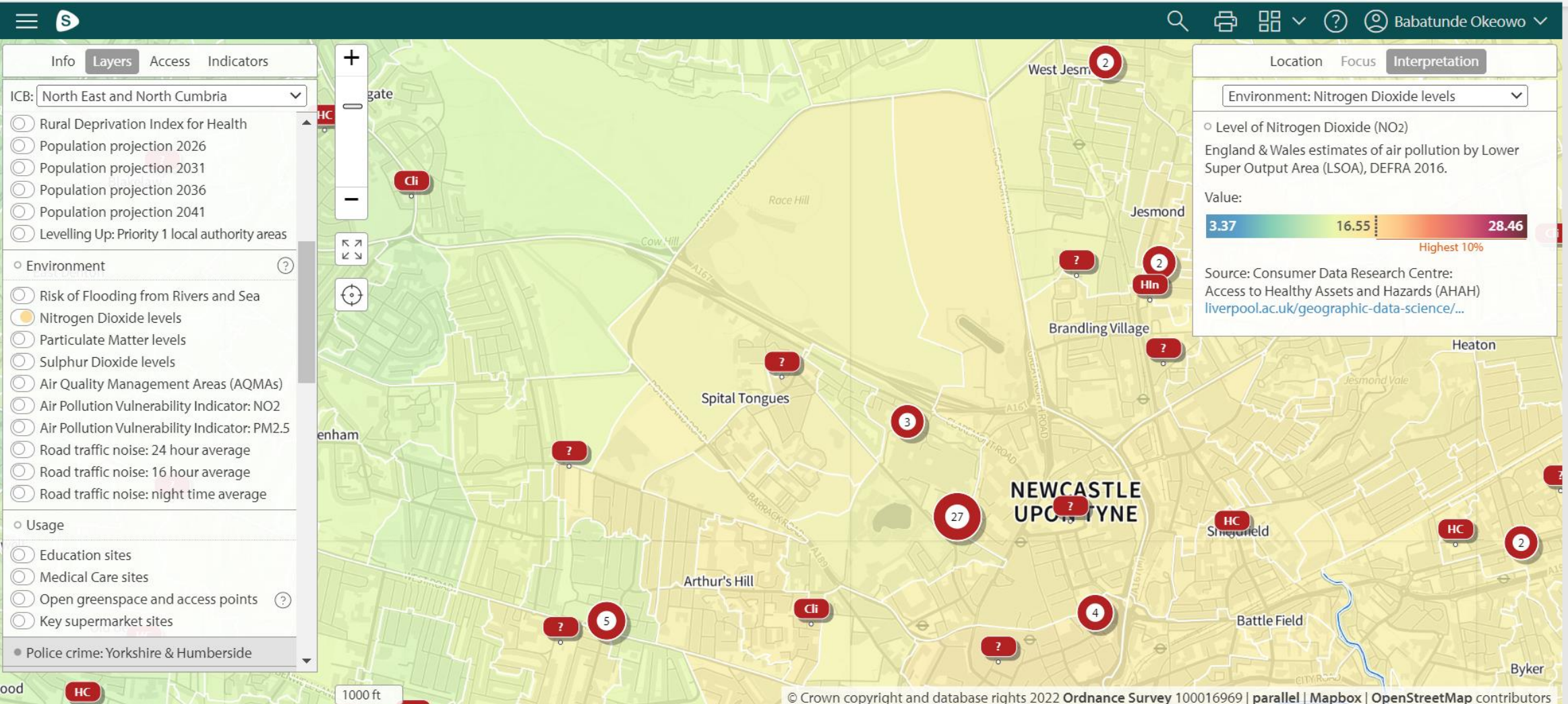


Figure 2 - NO2 levels according to the ShapeAtlas Website

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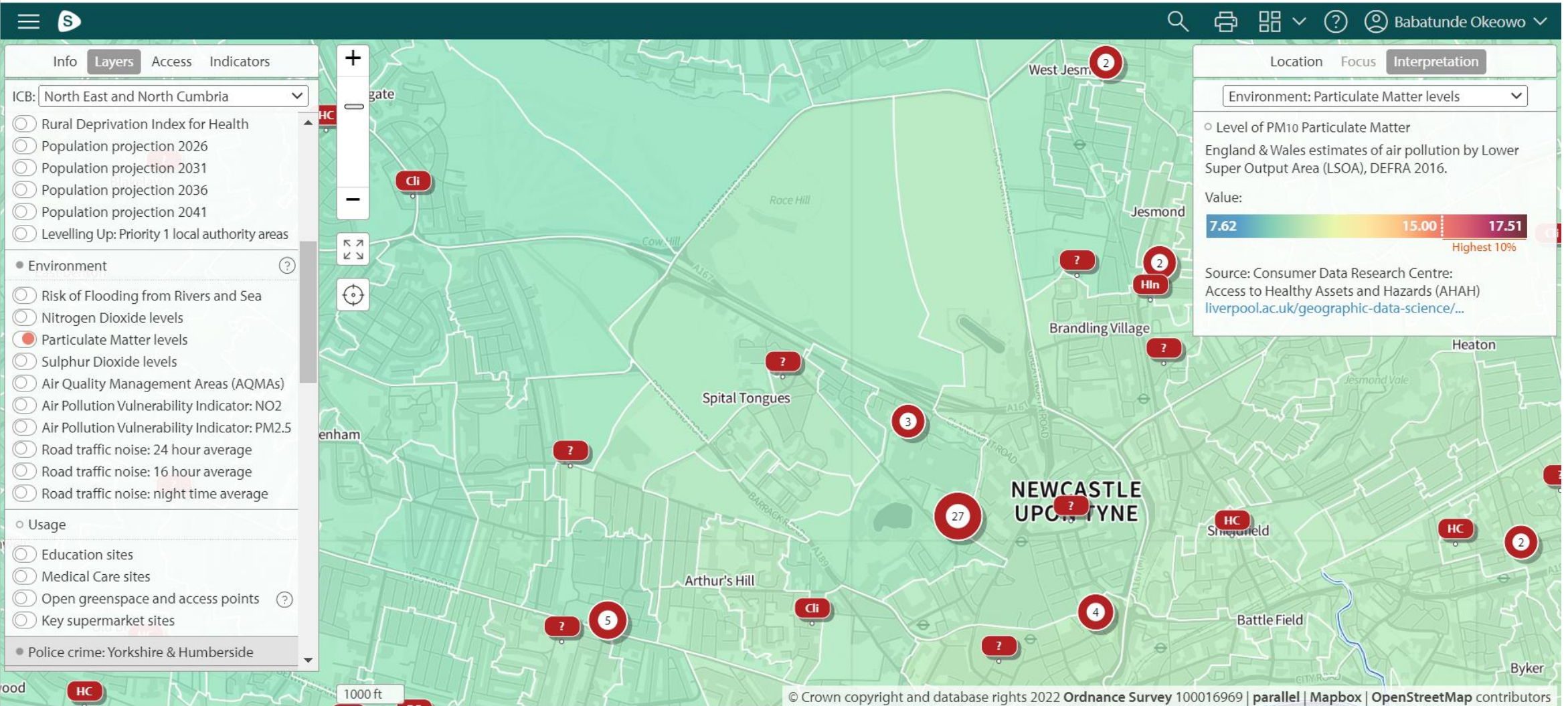


Figure 3 - PM10 levels according to the ShapeAtlas Website

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## RVI Specific Data on NO2, PM2.5, and PM10

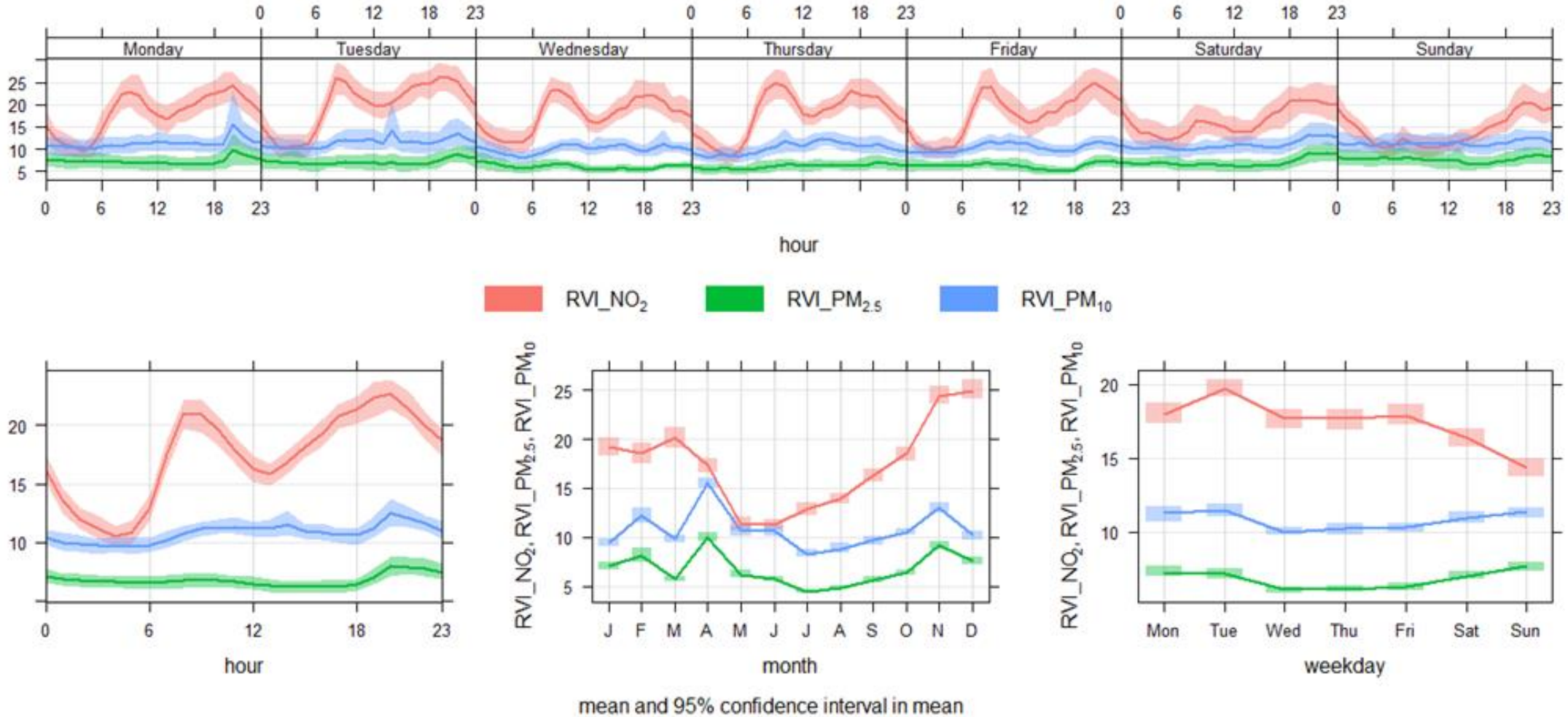


Figure 4 - Time variation plot of Project AQI (NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub>) RVI

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## RVI Specific Data

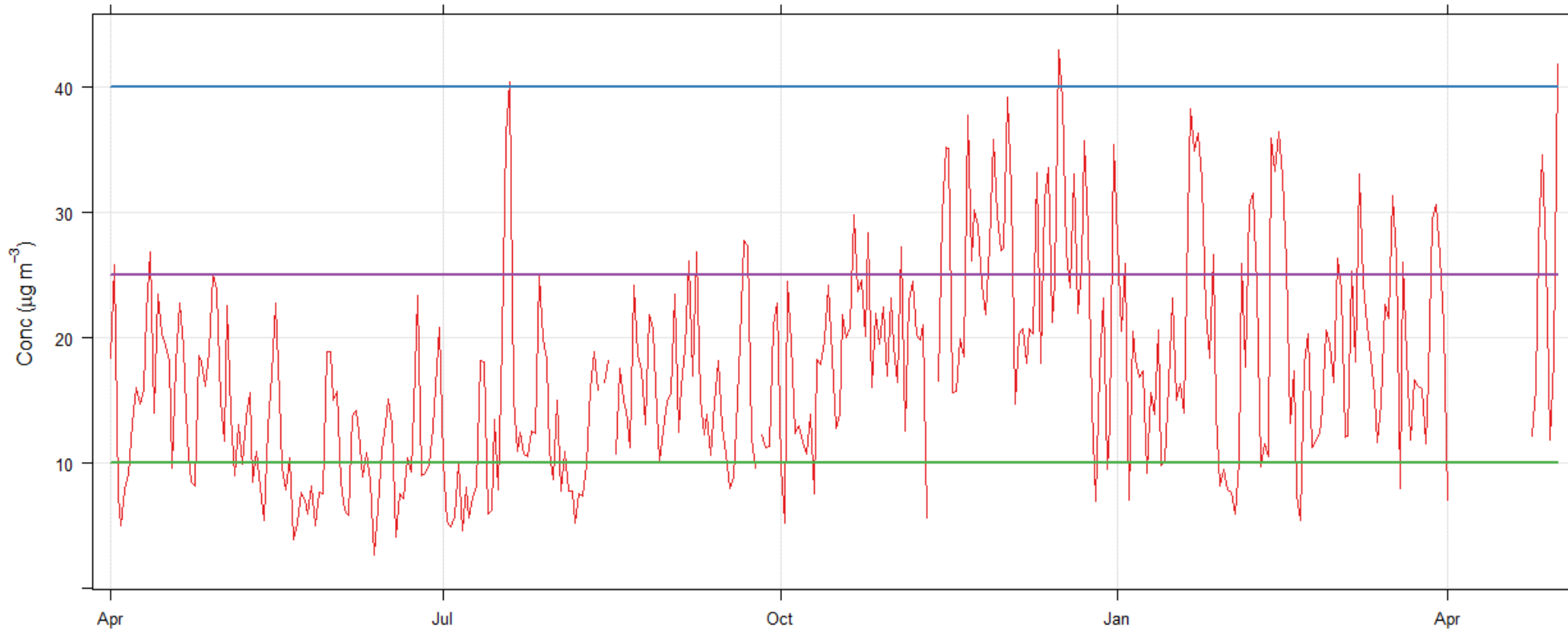
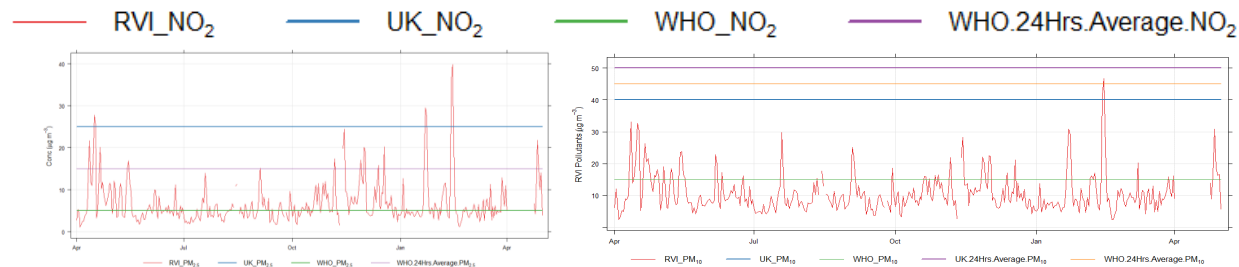


Figure 5 - Daily Average of NO<sub>2</sub> Concentration at RVI Monitoring Station Measured Against UK and WHO Guideline Concentrations.



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## RVI Specific Data

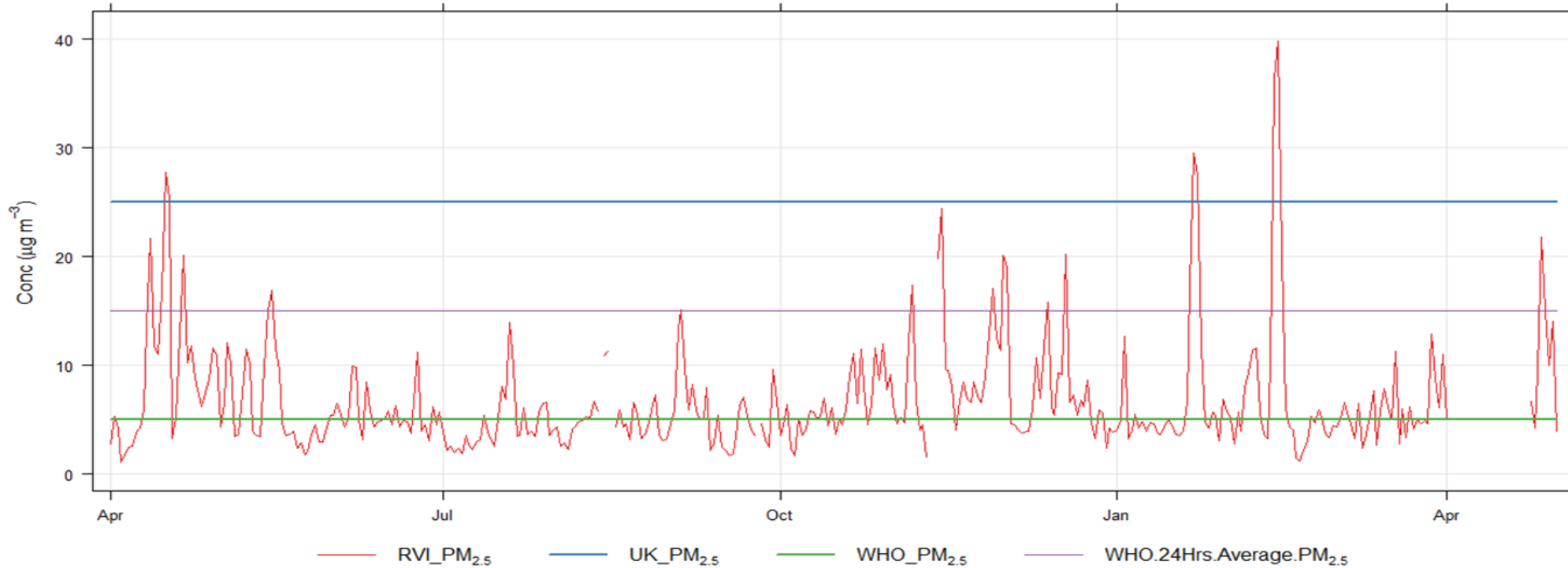
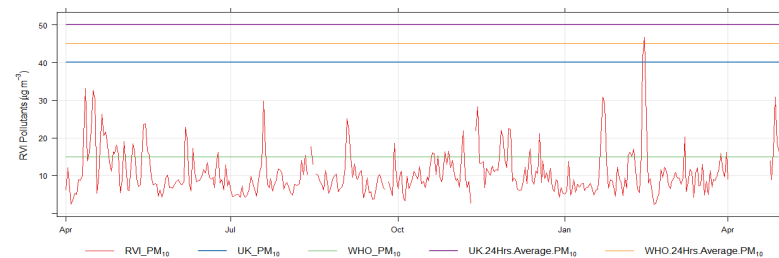
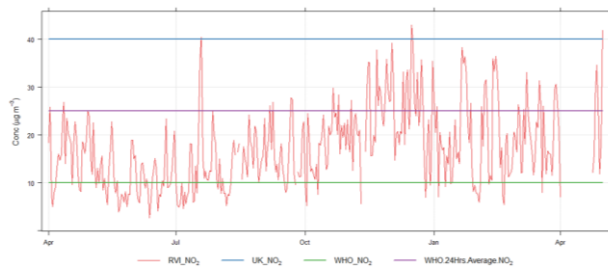
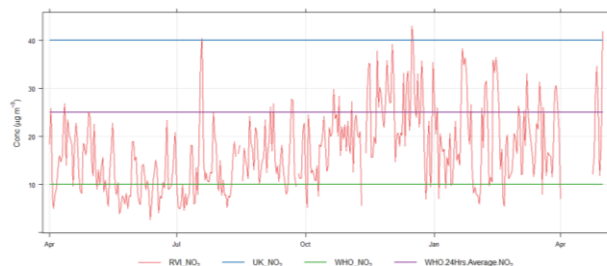
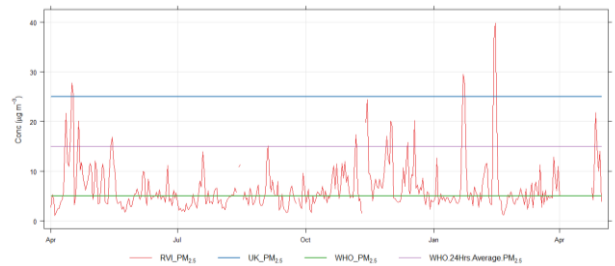
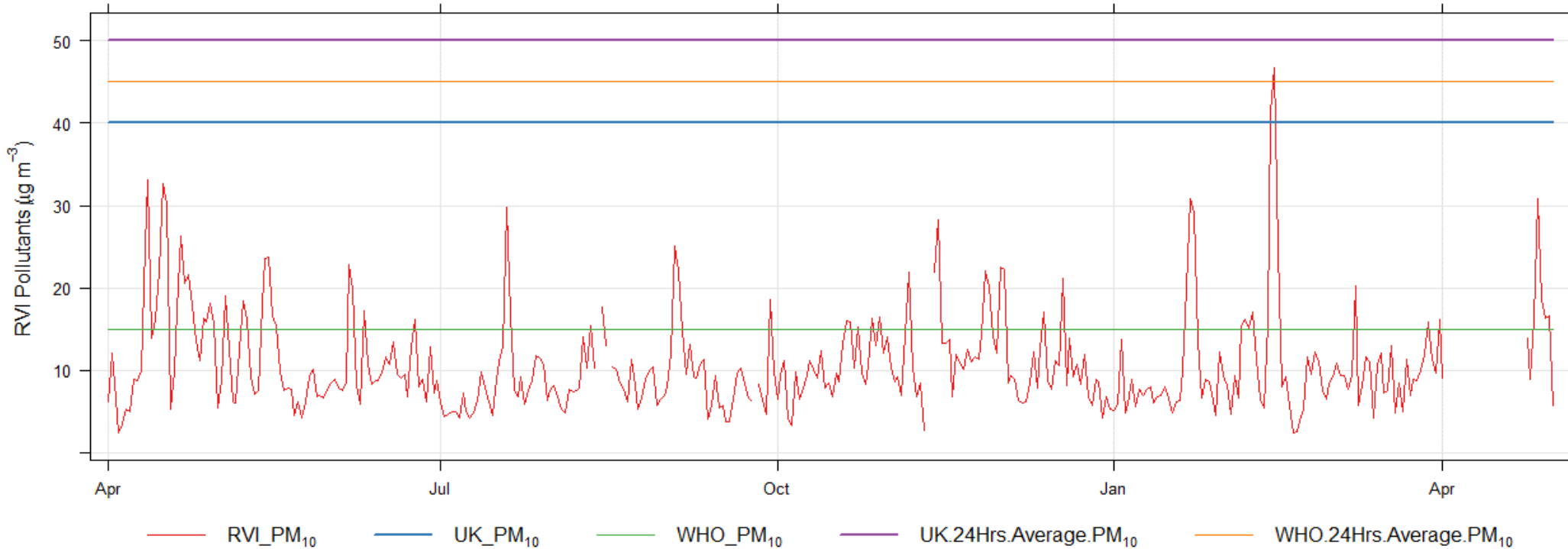


Figure 6 - Daily Average of PM<sub>2.5</sub> Concentration at RVI Monitoring Station Measured Against UK and WHO Guideline Concentrations



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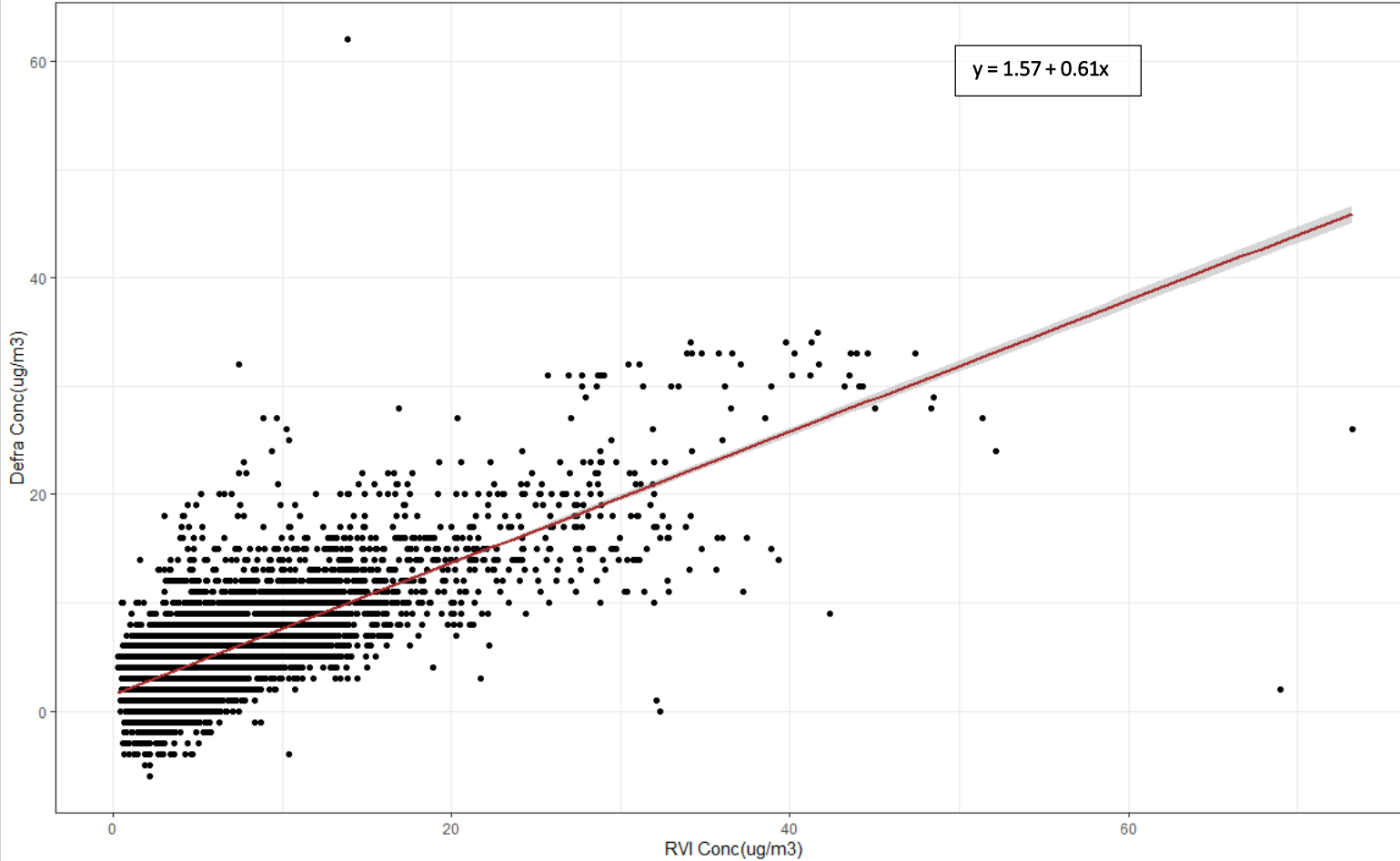
## RVI Specific Data



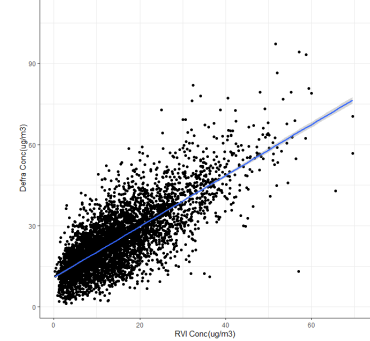


## Correlation Plots between RVI Data and Background

Correlation of PM<sub>2.5</sub> data from RVI and Defra Background concentrations at St Mary's



Correlation of NO<sub>2</sub> data from RVI and Defra Background concentrations at St Mary's



Correlation of PM<sub>10</sub> data from RVI and Defra Background concentrations at St Mary's

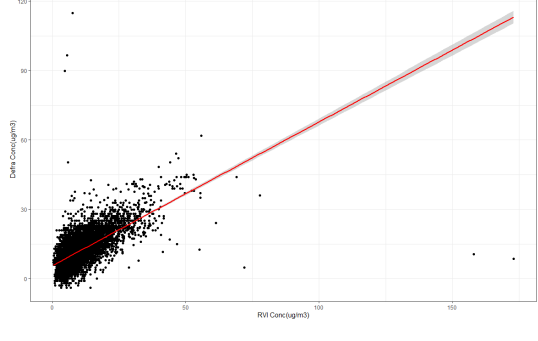


Figure 8 – Correlation plot for RVI and Background PM<sub>2.5</sub> Concentrations

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## Correlation Plots between RVI Data and Background

Correlation of NO<sub>2</sub> data from RVI and Defra Background concentrations at St Mary's

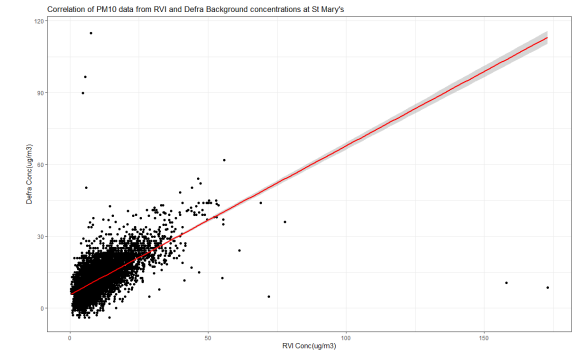
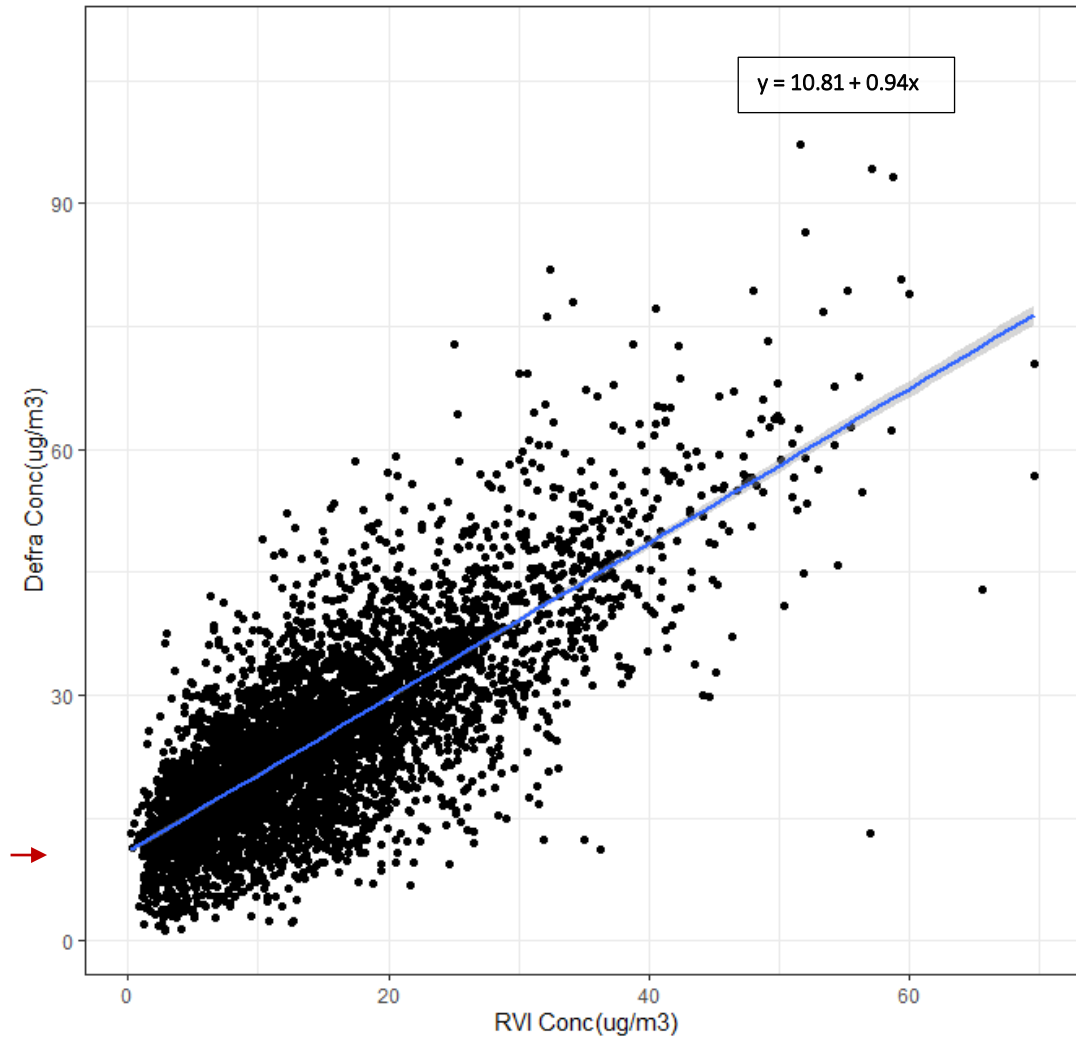
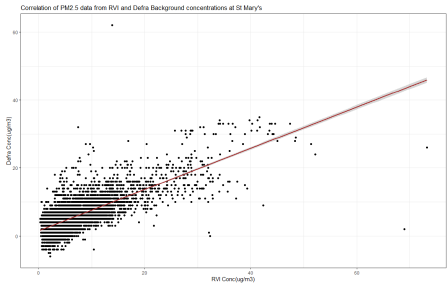


Figure 9 – Correlation plot for RVI and Background NO<sub>2</sub> Concentrations

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## Correlation Plots between RVI Data and Background

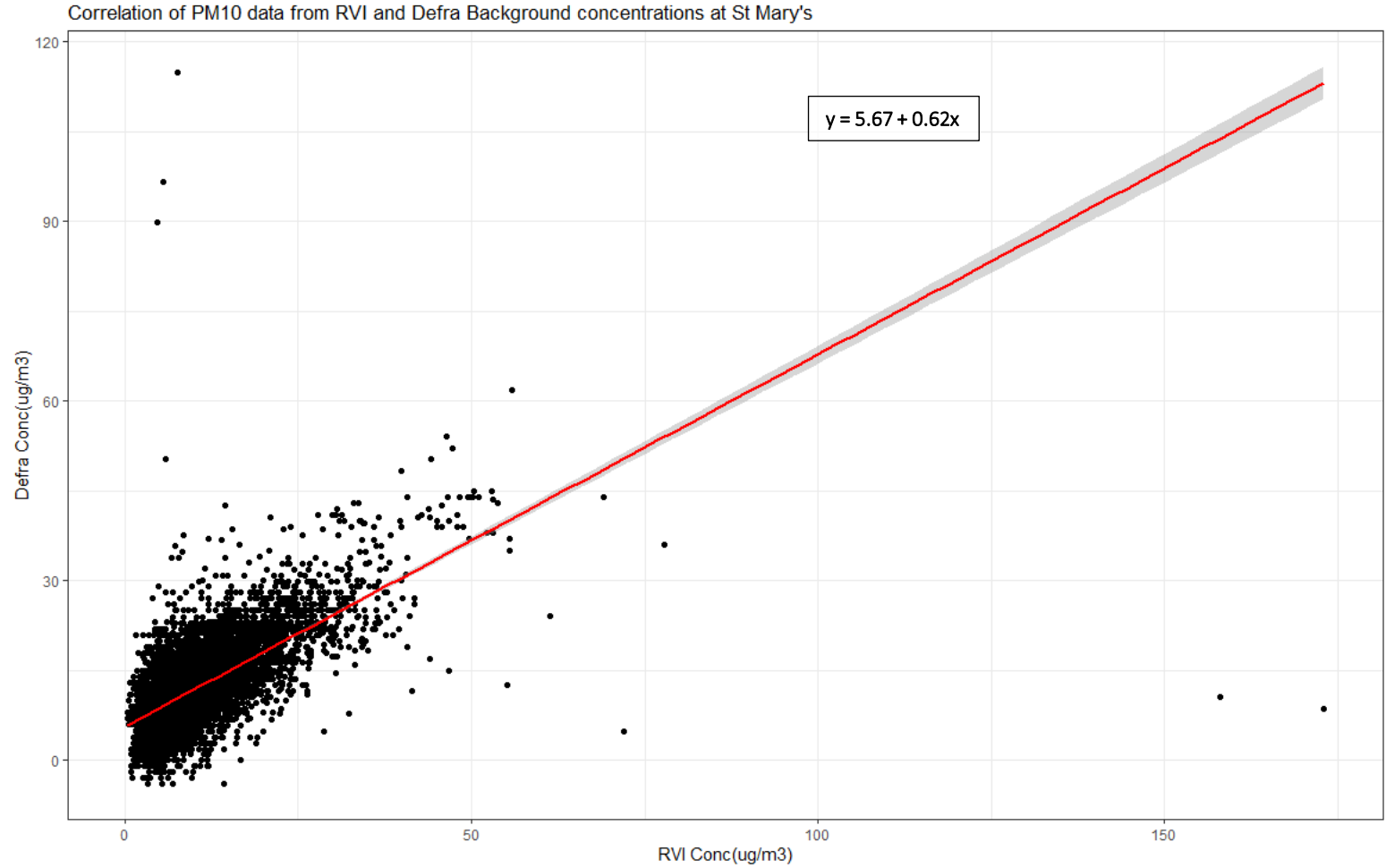
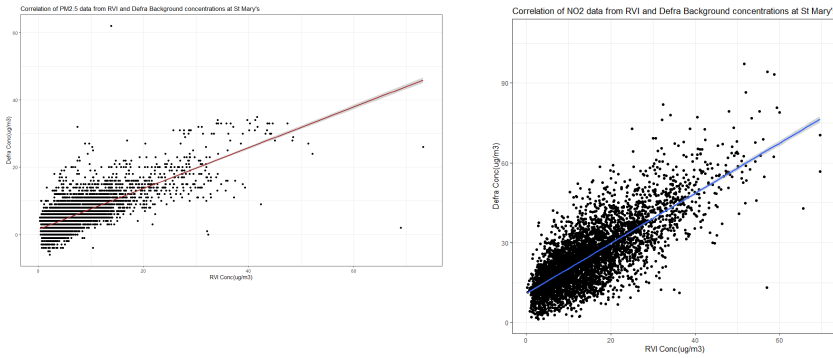


Figure 10 – Correlation plot for RVI and Background PM<sub>10</sub> Concentrations

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## Opportunity of what is possible

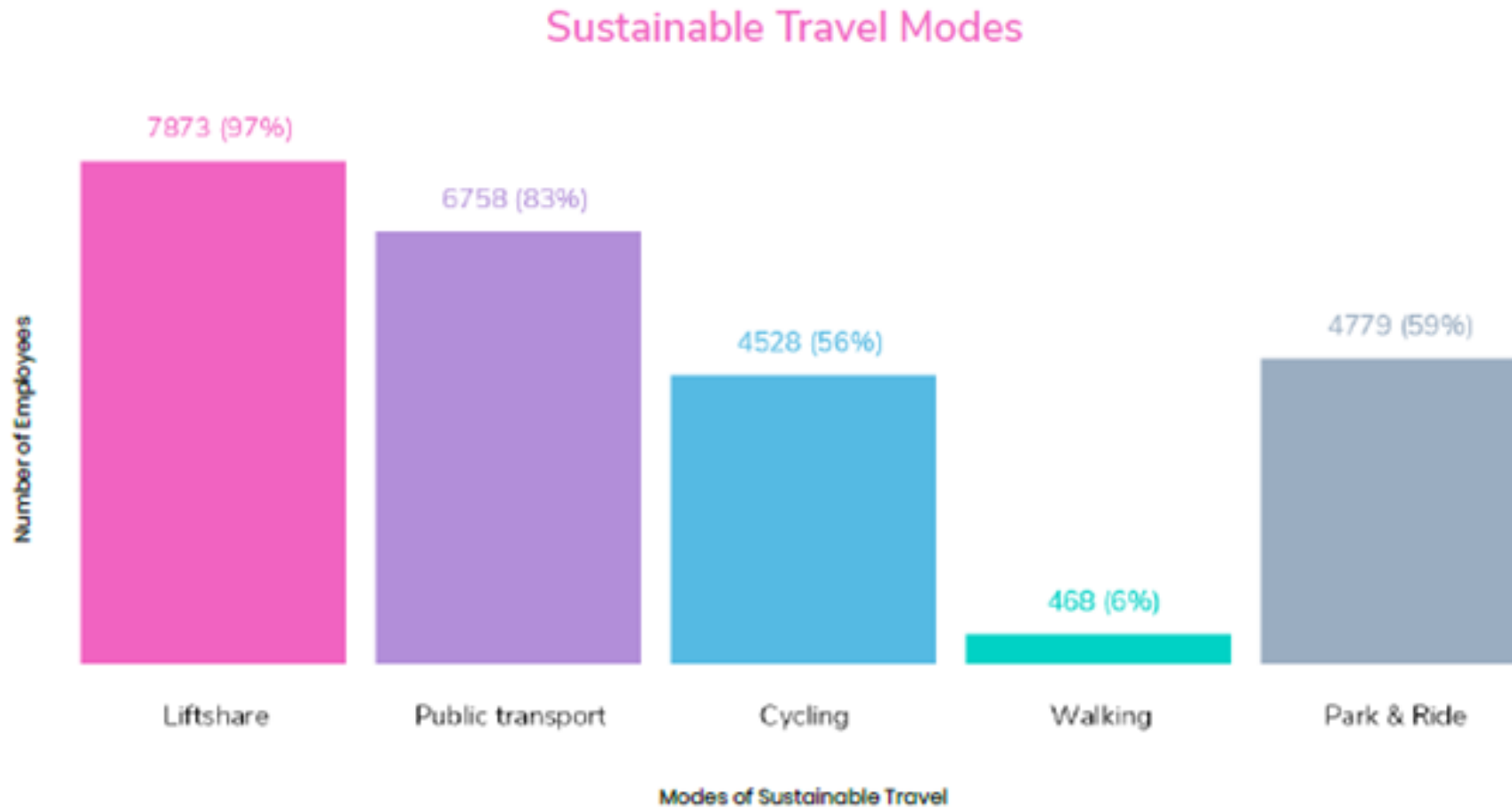


Figure 11 – Sustainable travel mode opportunity for RVI Staff

## Implications of these

Quick take aways from these data include

1. The RVI frequently experiences days with  $\text{NO}_2$  and  $\text{PM}_{2.5}$  concentrations in excess of the World Health Organisation's expected levels of daily exposure limit as seen in the time plot of data in figures 5, 6 , & 7.
2. Efforts towards air quality improvement at the hospital is a collaborative efforts between the hospital, the Newcastle Local Authority and the larger community as observed in figures 8-10 correlation plots
3. The over 2000 hospitals in areas with  $\text{PM}_{2.5}$  concentrations above WHO guidance level can improve their AQI and also have the potential of contributing to improved AQI within their local community.

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**THANK YOU!**



**Northumbria  
University**  
NEWCASTLE

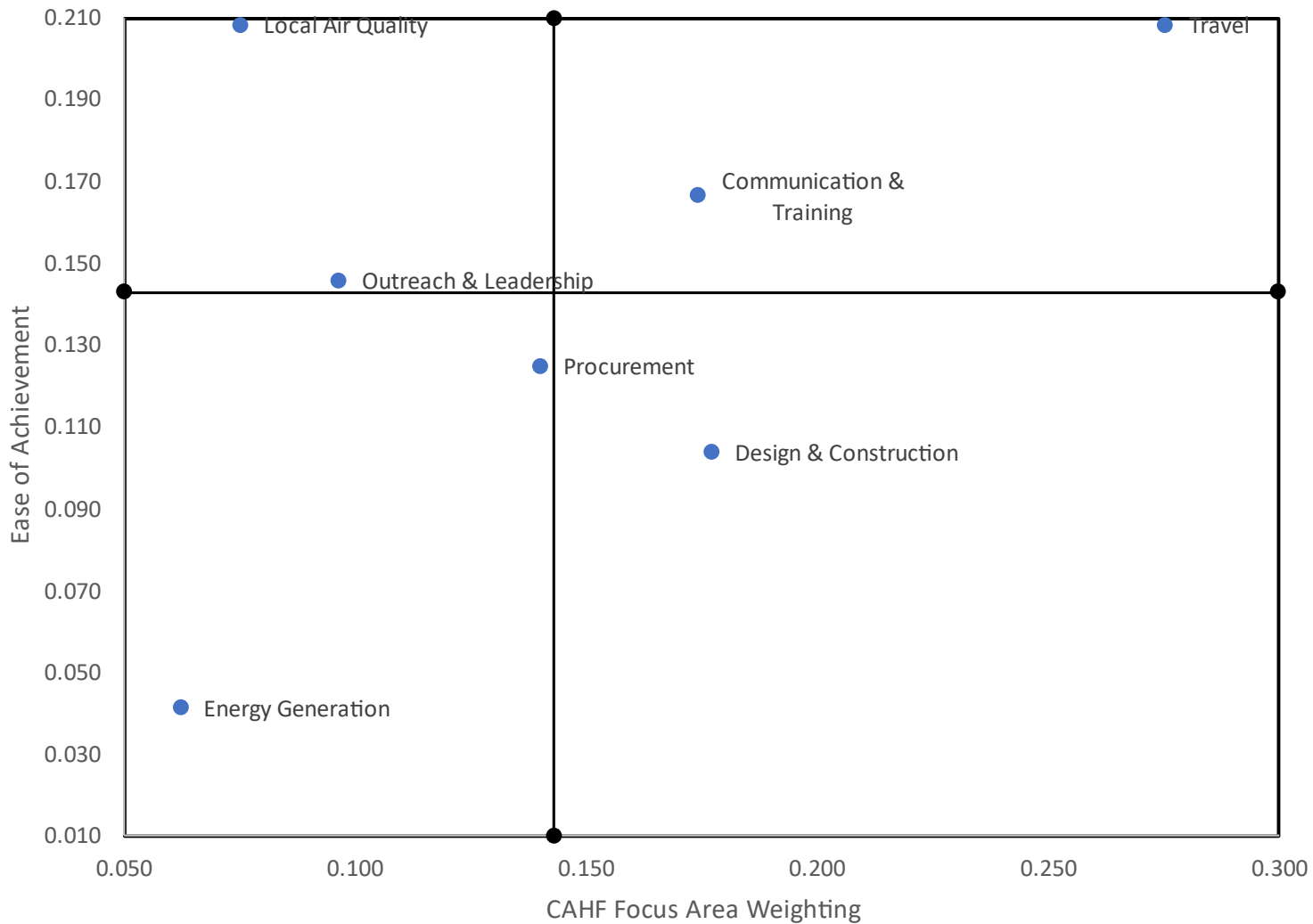


**The Newcastle upon Tyne Hospitals**  
NHS Foundation Trust



**Renewable Energy  
Northeast Universities**

# THE UK'S CLEAN AIR HOSPITAL FRAMEWORK: THE ROLE OF HOSPITALS AS ANCHOR INSTITUTIONS IN ACHIEVING IMPROVED AIR QUALITY WITHIN THE COMMUNITIES THEY SERVE



**Quadrant Plot is used on this project as a strategy for CAHF focus Area Implementation prioritization**

1. The Policy area that should be given highest prioritization is positioned in the top right corner of the quadrant i.e Travel, Communication & Training
2. While the lowest prioritization should be CAHF focus areas located at the bottom left corner of the quadrant i.e Energy, Procurement

*Ease of Achievement vs CAHF Weighting Quadrant plot of CAHF Focus Areas*