MOTT MACDONALD

Fact Sheet

Air quality information, with a focus on Harston

This note supports the figures prepared by Mott MacDonald using existing available data in response to a request from Great Cambridge Partnership to report on the current air quality situation in Harston.

No additional monitoring has been undertaken by GCP; the information presented here is based only on data currently available from local authorities and DEFRA.

Air quality monitoring

- The national air quality[1] objective for Annual Mean levels of Nitrogen dioxide (NO_2) is for levels of NO_2 to be lower than 40µg/m³ at sensitive locations such as people's homes, schools and hospitals.
- NO_2 is the main pollutant of concern from road traffic. The highest pollutant concentrations associated with road traffic can be found in busy urban areas. NO_2 concentrations on busy roads in Cambridge are generally higher than in surrounding areas.
- It is recognised that where concentrations of NO_2 are low and road traffic is the primary source of emissions, such as in Harston, the concentration of PM_{10}/$PM_{2.5}$ would be within the air quality objectives for PM_{10}/$PM_{2.5}$. Therefore in such situations, local authorities do not tend to monitor particulate matter PM_{10}/$PM_{2.5}$[2] in as many locations as NO_2.
- Currently available air quality monitoring undertaken by Cambridge City Council and South Cambridgeshire District Council is available on their websites.

Harston

There is a diffusion tube at 47 High Street which has been used to measure roadside annual mean NO_2 concentrations since 2006. While not confirmed, it is possible the reason why air quality monitoring started in Harston is due to the village being situated around a primary road (A10) that connects Cambridge to the south and has a direct junction with the M11.

Table 1 presents the annual NO_2 concentration measured for Harston since 2006. The data and associated figures prepared with this data show that the annual NO_2 concentrations have remained below the air quality objective over this period.

Table 1: NO_2 monitoring data at 47 High Street, Harston

Year	Annual NO_2 concentration (µg/m3)
2006	26.6
2007	26.1
2008	27.0
2009	28.1
2010	29.6
2011	23.7
2012	25.6

[1] DEFRA. UK and EU Air Quality Limits. National air quality objectives and European Directive limit and target values for the protection of human health. Available online at: https://uk-air.defra.gov.uk/assets/documents/Air_Quality_Objectives_Update.pdf

[2] PM = particulate matter, 2.5 and 10 refer to the size of the particulates in micrometers.

Year	Annual NO_2 concentration (µg/m3)
2013	25.7
2014	28.0
2015	28.4
2016	28.6
2017	27.3

Source: South Cambridgeshire District Council Review and Assessment Documents

Additional Information has been collated on regional modelled NO_2, $PM_{2.5}$ and PM_{10}[3] levels and from site specific monitoring locations in the Cambridge area for the same parameters. Figures have been prepared by Mott MacDonald using existing available data.

On the proposed scheme and next steps

- The effects of road traffic on air quality are worst within a few metres of the roadside. As the proposed new P&R site is greater than 200m from any sensitive receptors[4] (including Harston), its location wouldn't have any direct effects on sensitive receptors from vehicle traffic movements at the site.
- There will be growth in traffic along the A10 in response to committed developments in Cambridge as increasing numbers of people commute to and from work in the city, or simply visit the city.
- The P&R is intended to alleviate congestion within the city arising from this growth in traffic. With growth in traffic it is possible that air quality would decline. However, there are likely to be significant ongoing improvements in vehicle engine technology which will result in reductions in vehicle emissions with a consequential benefit to air quality. To predict changes in air quality in the future requires detailed modelling of traffic projections and the results to be used in an air quality model that accounts for improvement in vehicle technology to calculate likely future air quality conditions.
- The next step for this project is to prepare the Outline Business Case (OBC), which will consider a short list of options for the proposed P&R. While air quality monitoring would usually be undertaken at the Environmental Impact Assessment (EIA) stage, GCP has requested that the monitoring should be brought forward to help inform the OBC. Air quality monitoring specific to this proposed scheme will start early next year.
- If a decision is made to take the proposed scheme to the next stage, the preferred option will be subject to an EIA. During the EIA the potential impacts of the proposed scheme on air quality will be modelled in detail, and if required and practical mitigation measures will be recommended as part of the output from the EIA to include in the overall scheme design.

[3] PM = particulate matter, 2.5 and 10 refer to the size of the particulates in micrometers.

[4] Example of common sensitive receptors are residential properties, schools and hospitals.

Legend

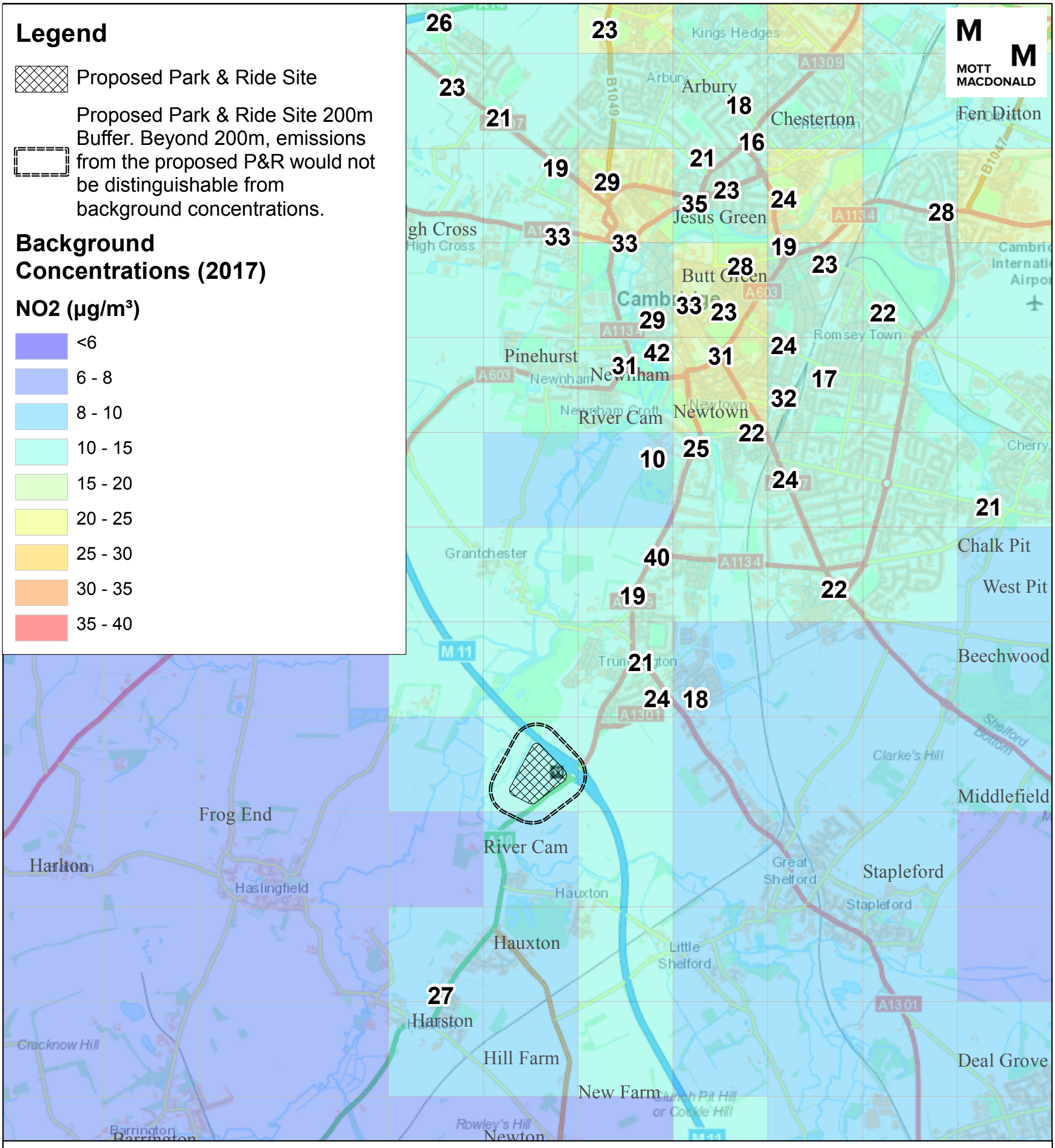
Proposed Park & Ride Site

Proposed Park & Ride Site 200m Buffer. Beyond 200m, emissions from the proposed P&R would not be distinguishable from background concentrations.

Background Concentrations (2017)

NO2 (µg/m³)

- <6
- 6 - 8
- 8 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40



Numbers on the map present the concentration in micrograms per metre cubed (µg/m³) of nitrogen dioxide (NO2) measured by Cambridgeshire City Council and South Cambridgeshire District Council in 2017. These are different from the coloured squares as they represent the concentration at a specific location e.g. the concentration along a particular road rather than across the whole coloured 1km grid square. The air quality objective for NO2 is 40µg/m³ which applies at sensitive locations such as peoples' homes, schools and hospitals.

The coloured tiles on the map present modelled background pollutant concentrations for 1km grid squares provided Defra. These are different from the numbers on the map as they are an average of the concentration across the entire square. The modelled background concentrations take account of emission sources both within and outside the grid square and are representative of pollutant concentrations away from emissions sources. For example, emissions from a road would not be distinguishable from background concentrations beyond 200m of the roadside.

Legend

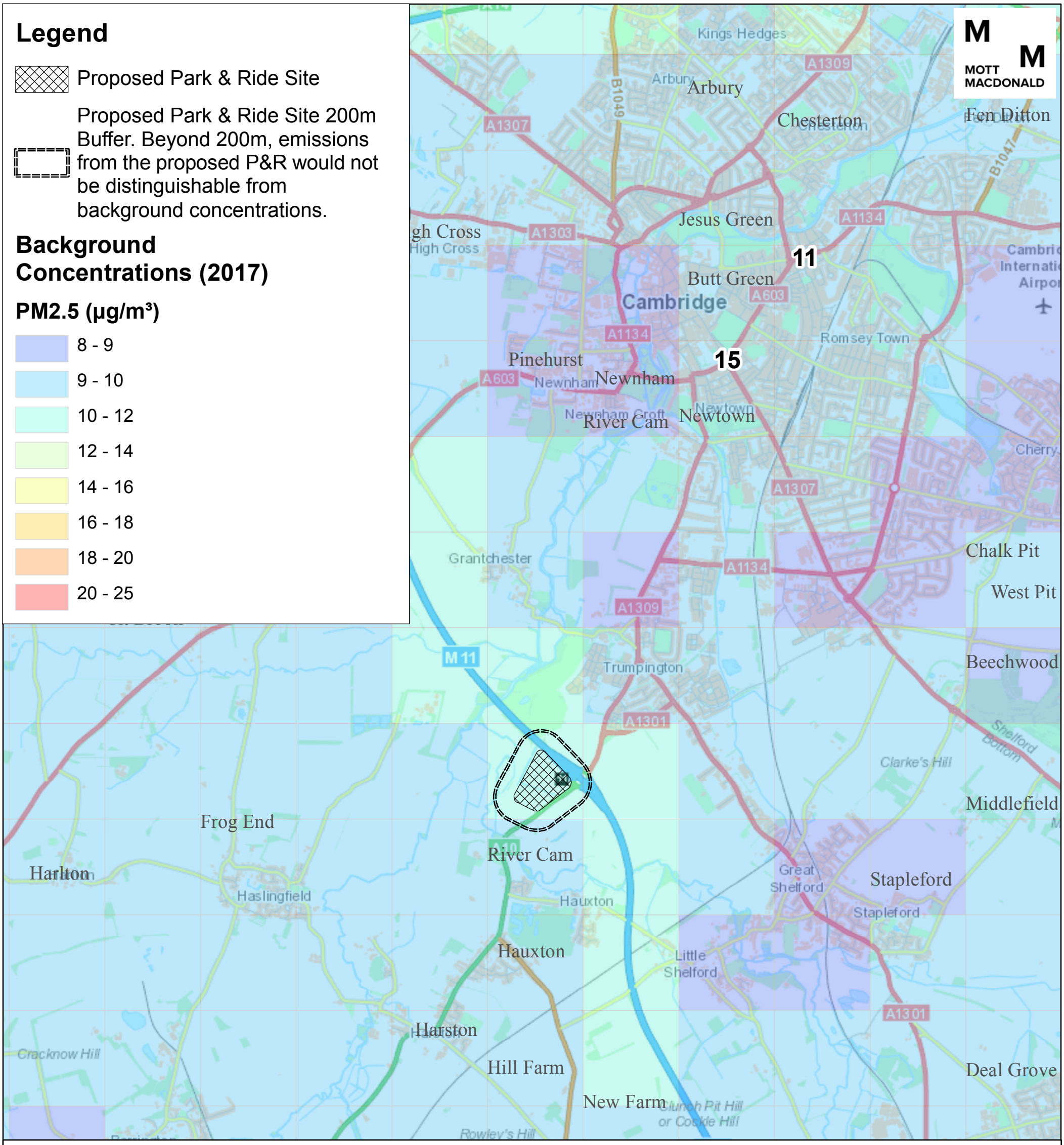
Proposed Park & Ride Site

Proposed Park & Ride Site 200m Buffer. Beyond 200m, emissions from the proposed P&R would not be distinguishable from background concentrations.

Background Concentrations (2017)

PM2.5 (µg/m³)

- 8 - 9
- 9 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- 16 - 18
- 18 - 20
- 20 - 25



Numbers on the map present the concentration in micrograms per metre cubed (µg/m³) of particulate matter less than 2.5 microns in diameter (PM2.5) measured by Cambridgeshire City Council and South Cambridgeshire District Council in 2017. These are different from the coloured squares as they represent the concentration at a specific location e.g. the concentration along a particular road rather than across the whole coloured 1km grid square. The air quality objective for PM2.5 is 25µg/m³ which applies at sensitive locations such as peoples' homes, schools and hospitals.

The coloured tiles on the map present modelled background pollutant concentrations for 1km grid squares provided Defra. These are different from the numbers on the map as they are an average of the concentration across the entire square. The modelled background concentrations take account of emission sources both within and outside the grid square and are representative of pollutant concentrations away from emissions sources. For example, emissions from a road would not be distinguishable from background concentrations beyond 200m of the roadside.

Legend

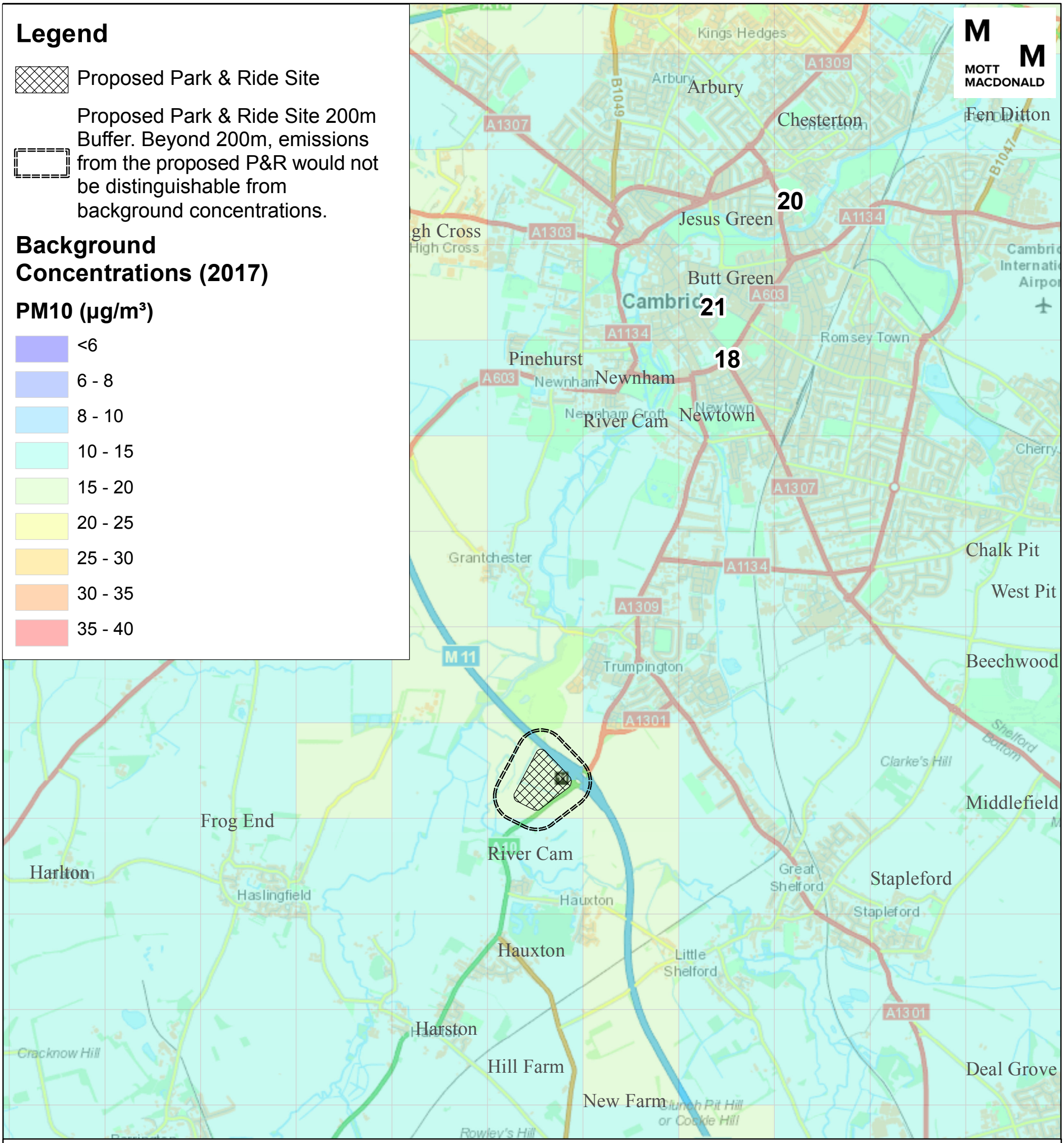
Proposed Park & Ride Site

Proposed Park & Ride Site 200m Buffer. Beyond 200m, emissions from the proposed P&R would not be distinguishable from background concentrations.

Background Concentrations (2017)

PM10 (µg/m³)

- <6
- 6 - 8
- 8 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40



Numbers on the map present the concentration in micrograms per metre cubed (µg/m³) of particulate matter less than 10 microns in diameter (PM10) measured by Cambridgeshire City Council and South Cambridgeshire District Council in 2017. These are different from the coloured squares as they represent the concentration at a specific location e.g. the concentration along a particular road rather than across the whole coloured 1km grid square. The air quality objective for PM10 is 40µg/m³ which applies at sensitive locations such as peoples' homes, schools and hospitals.

The coloured tiles on the map present modelled background pollutant concentrations for 1km grid squares provided Defra. These are different from the numbers on the map as they are an average of the concentration across the entire square. The modelled background concentrations take account of emission sources both within and outside the grid square and are representative of pollutant concentrations away from emissions sources. For example, emissions from a road would not be distinguishable from background concentrations beyond 200m of the roadside.