Comhairle Cathrach
& Contae **Luimnigh**

Limerick City
& County Council

Air Quality Report for Limerick

March 2019

Introduction

During March 2019 air quality was monitored at two locations in the metropolitan area of Limerick to provide live indicative air quality data to the public. These monitors are located in Castletroy and Mungret. The monitor which was located on O'Connell Street is being redeployed to a new location.

The monitors operating at Castletroy and Mungret in March 2019 measured particulate matter. These monitors were calibrated at the start of 2019 and were reinstalled at their locations on 15th March 2019. The Council's monitors that measure gases (including nitrogen dioxide, sulphur dioxide, carbon monoxide and ozone) were being serviced and calibrated in the UK in March 2019.

Real time data from the operational monitors can be accessed at www.airqweb.com.

Particulate matter

Particulate matter (PM) which is commonly used as an indicator of dust particles in air, including total suspended particulates, PM_{10}, $PM_{2.5}$ and PM_1.

PM_{10} is particulate matter 10 microns or less in diameter, $PM_{2.5}$ is particulate matter 2.5 microns or less in diameter and PM_1 is particulate matter 1 micron or less. $PM_{2.5}$ is generally described as fine particulates. As a comparison, the width of a human hair is around 100 microns so approximately 40 $PM_{2.5}$ will fit along its width.

The particulate matter indices that are of primary concern for human health are PM_{10}, $PM_{2.5}$ and PM_1. These are the sub-fraction of particles which can penetrate into the alveoli (air sacs) in the lungs. Chronic exposure to particles contributes to the risk of developing cardiovascular and respiratory diseases, as well as of lung cancer.

Air Quality Standards

The CAFE (Clean Air for Europe) Directive sets air quality standards for member states in Europe and has been transposed into Irish legislation by the **Air Quality Standards Regulations.** The limit values for particulates are given below.

Pollutant	Objective	Averaging Period	Limit Value	Basis of Application of the Limit Value	Limit Value Attainment Date
PM_{10}	Protection of human health	24-hours	50 µg/m^3	Not to be exceeded more than 35 times in a calendar year	1 Jan 2005
PM_{10}	Protection of human health	Calendar year	40 µg/m^3	Annual mean	1 Jan 2005
$PM_{2.5}$	Protection of human health	Calendar year	25 µg/m^3	Annual mean	1 Jan 2005
$PM_{2.5}$	Protection of human health	Calendar year	20 µg/m^3	Annual mean	1 Jan 2020

The World Health Organisation (WHO) provides air quality guidelines as follows:

Pollutant	Averaging period	Guideline
PM_{10}	Calendar year	20 µg/m^3
	24-hours	50 µg/m^3
$PM_{2.5}$	Calendar year	10 µg/m^3
	24-hours	25 µg/m^3

Air Quality in March

The graphs on the following pages show the 24 hourly mean values of Total Particulates, PM_{10}, $PM_{2.5}$, and PM_1 for the month of March at the three monitoring sites. The monitoring results for particulate matter have been filtered out where the humidity at the station has been measured as greater than 85 %, as per a recommendation by the EPA[1]. The relevant air quality standards or WHO guideline values for PM_{10}, $PM_{2.5}$. There are no standards currently set for Total Particulates and PM_1.

The results for particulate matter indicated generally good air quality throughout March.

Further information on air quality and health can be found at: http://www.epa.ie/air/quality/index/#d.en.51478

The average values for particulate matter since the monitors were reinstalled following calibration are shown in the table below and compared with the annual mean limits and guidelines. While it appears to show a slight exceedance this is not a valid comparison because the averaging period is too short.

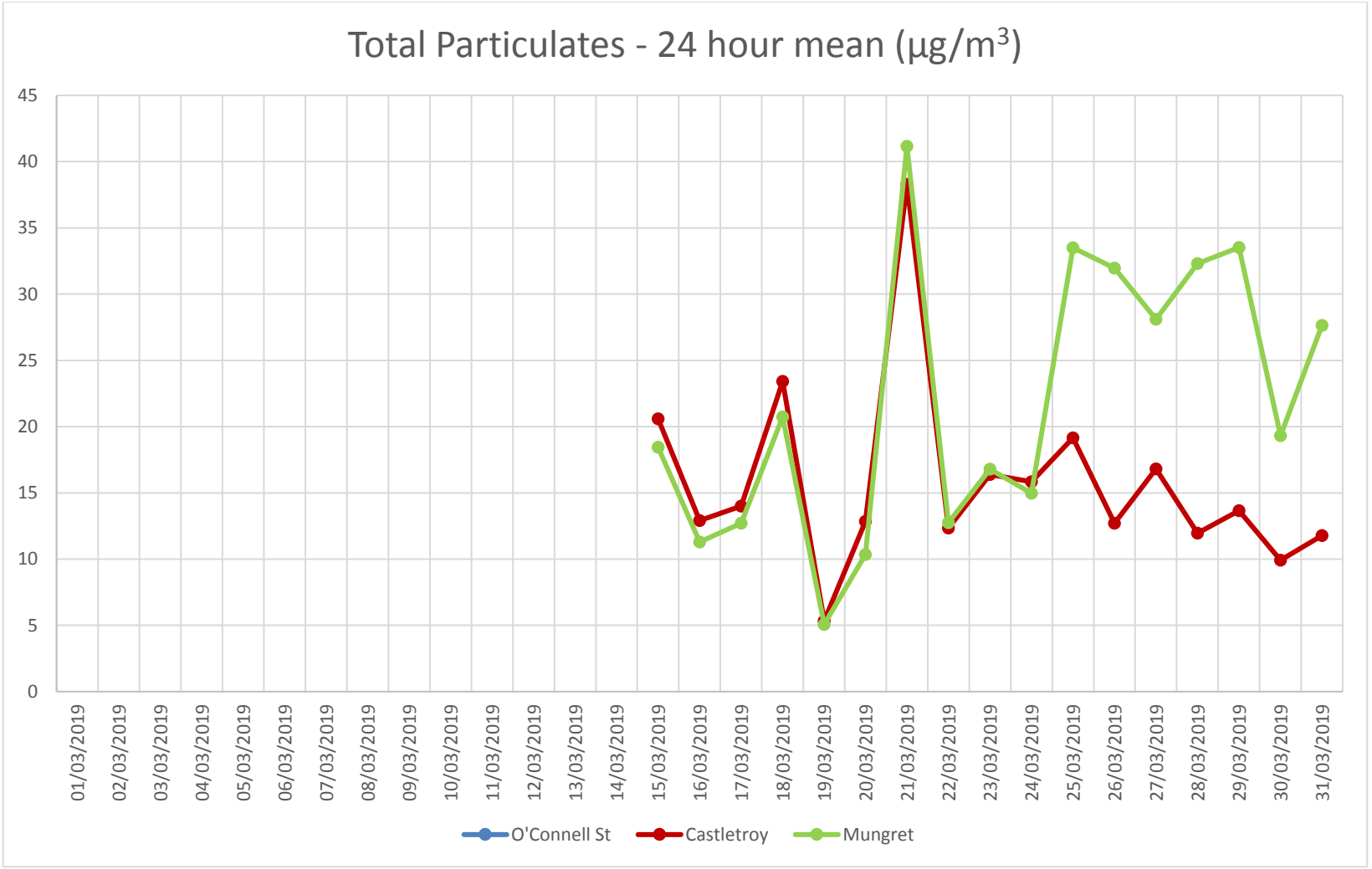
[1] Limerick City and County Council included humidity and temperature sensors to the monitoring suite on 24th January 2018.

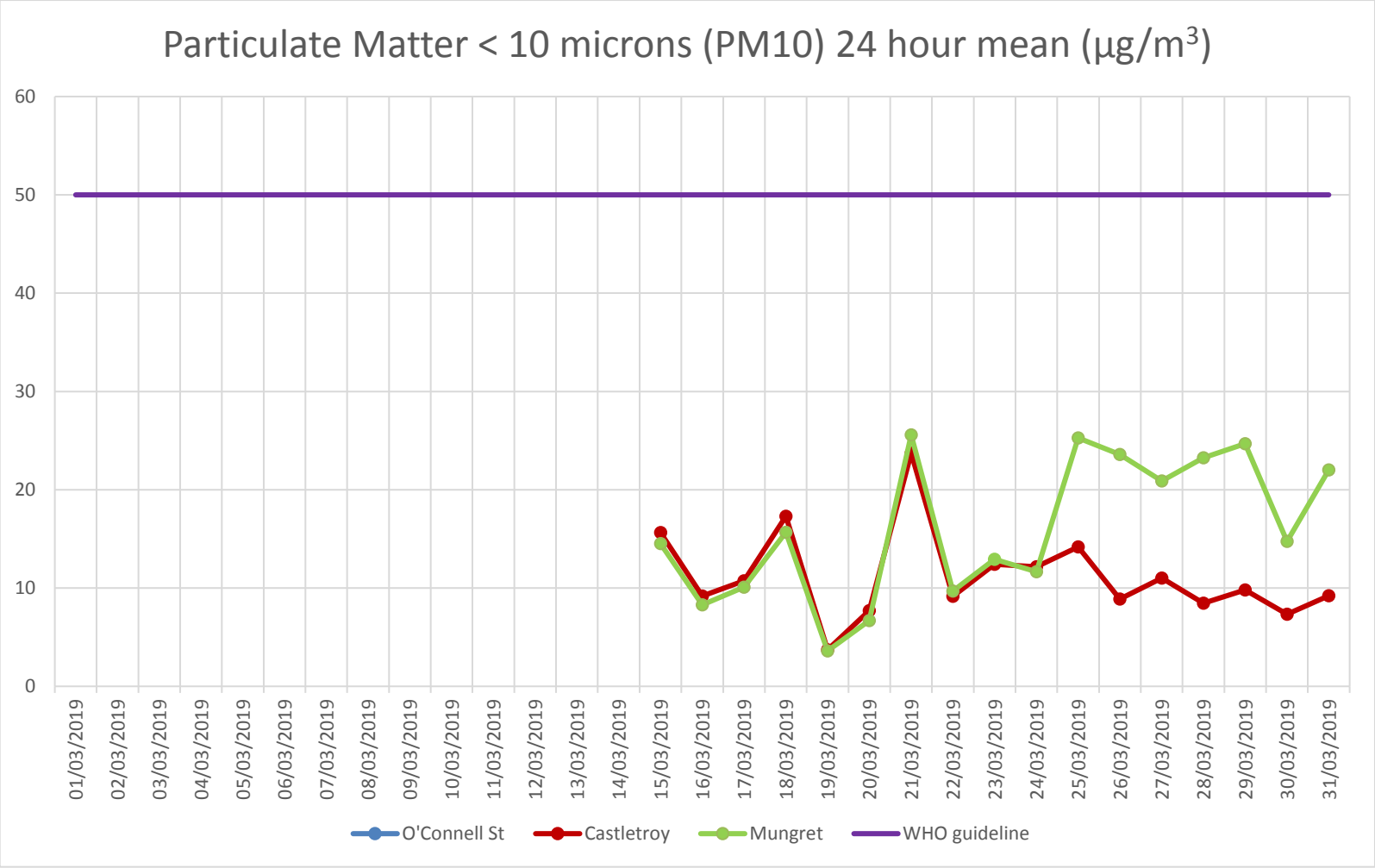
Parameter	Location	Measured long term mean (µg/m^3)	WHO annual mean guideline (µg/m^3)	EU CAFÉ directive annual mean limit(µg/m^3)
Total Particulates (15th – 31st Mar 19)	Castletroy	16 µg/m^3	None specified	None specified
	Mungret	23 µg/m^3		
PM_{10} (15th – 31st Mar 19)	Castletroy	11 µg/m^3	20 µg/m^3	40 µg/m^3
	Mungret	17 µg/m^3		
$PM_{2.5}$ (15th – 31st Mar 19)	Castletroy	8 µg/m^3	10 µg/m^3	25 µg/m^3
	Mungret	12 µg/m^3		
PM_1 (15th – 31st Mar 19)	Castletroy	4 µg/m^3	None specified	None specified
	Mungret	5 µg/m^3		

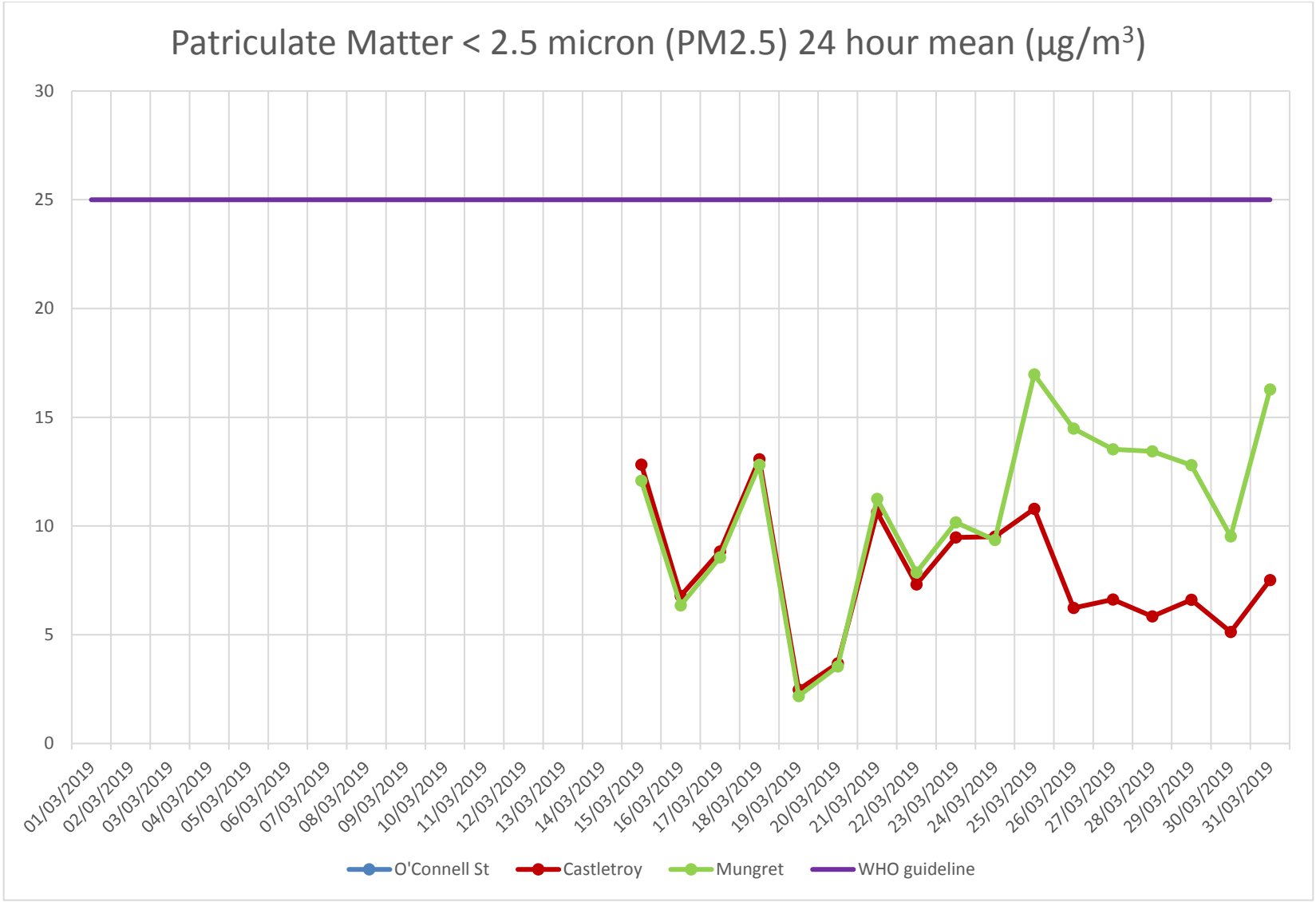
The maximum daily mean values for particulate matter, for March, are shown in the table below and compared with the WHO air quality guidelines where they exist.

Pollutant	Total Particulates	PM_{10}	$PM_{2.5}$	PM_1
Averaging period	**-**	**24-hours**	**24-hours**	**-**
Guideline	**None**	**50 µg/m^3**	**25 µg/m^3**	**None**
Maximum March '19 – Castletroy	38 µg/m^3 *31/03/19*	24 µg/m^3 *31/03/19*	11 µg/m^3 *25/03/19*	6 µg/m^3 *23/03/19*
Maximum March '19 - Mungret	41 µg/m^3 *31/03/19*	26 µg/m^3 *31/03/19*	17 µg/m^3 *25/03/19*	7 µg/m^3 *31/03/19*

There were no exceedances of WHO guideline values for the daily maximum of PM_{10} and $PM_{2.5}$ at Castletroy or Mungret.


Total Particulates - 24 hour mean (µg/m3)
45
40
35
30
25
20
15
10
5
0
01/03/2019
02/03/2019
03/03/2019
04/03/2019
05/03/2019
06/03/2019
07/03/2019
08/03/2019
09/03/2019
10/03/2019
11/03/2019
12/03/2019
13/03/2019
14/03/2019
15/03/2019
16/03/2019
17/03/2019
18/03/2019
19/03/2019
20/03/2019
21/03/2019
22/03/2019
23/03/2019
24/03/2019
25/03/2019
26/03/2019
27/03/2019
28/03/2019
29/03/2019
30/03/2019
31/03/2019
O'Connell St
Castletroy
Mungret


Particulate Matter < 10 microns (PM10) 24 hour mean (µg/m3)
60
50
40
30
20
10
0
01/03/2019
02/03/2019
03/03/2019
04/03/2019
05/03/2019
06/03/2019
07/03/2019
08/03/2019
09/03/2019
10/03/2019
11/03/2019
12/03/2019
13/03/2019
14/03/2019
15/03/2019
16/03/2019
17/03/2019
18/03/2019
19/03/2019
20/03/2019
21/03/2019
22/03/2019
23/03/2019
24/03/2019
25/03/2019
26/03/2019
27/03/2019
28/03/2019
29/03/2019
30/03/2019
31/03/2019
O'Connell St
Castletroy
Mungret
WHO guideline


Patriculate Matter < 2.5 micron (PM2.5) 24 hour mean (µg/m3)
30
25
20
15
10
5
0
01/03/2019
02/03/2019
03/03/2019
04/03/2019
05/03/2019
06/03/2019
07/03/2019
08/03/2019
09/03/2019
10/03/2019
11/03/2019
12/03/2019
13/03/2019
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16/03/2019
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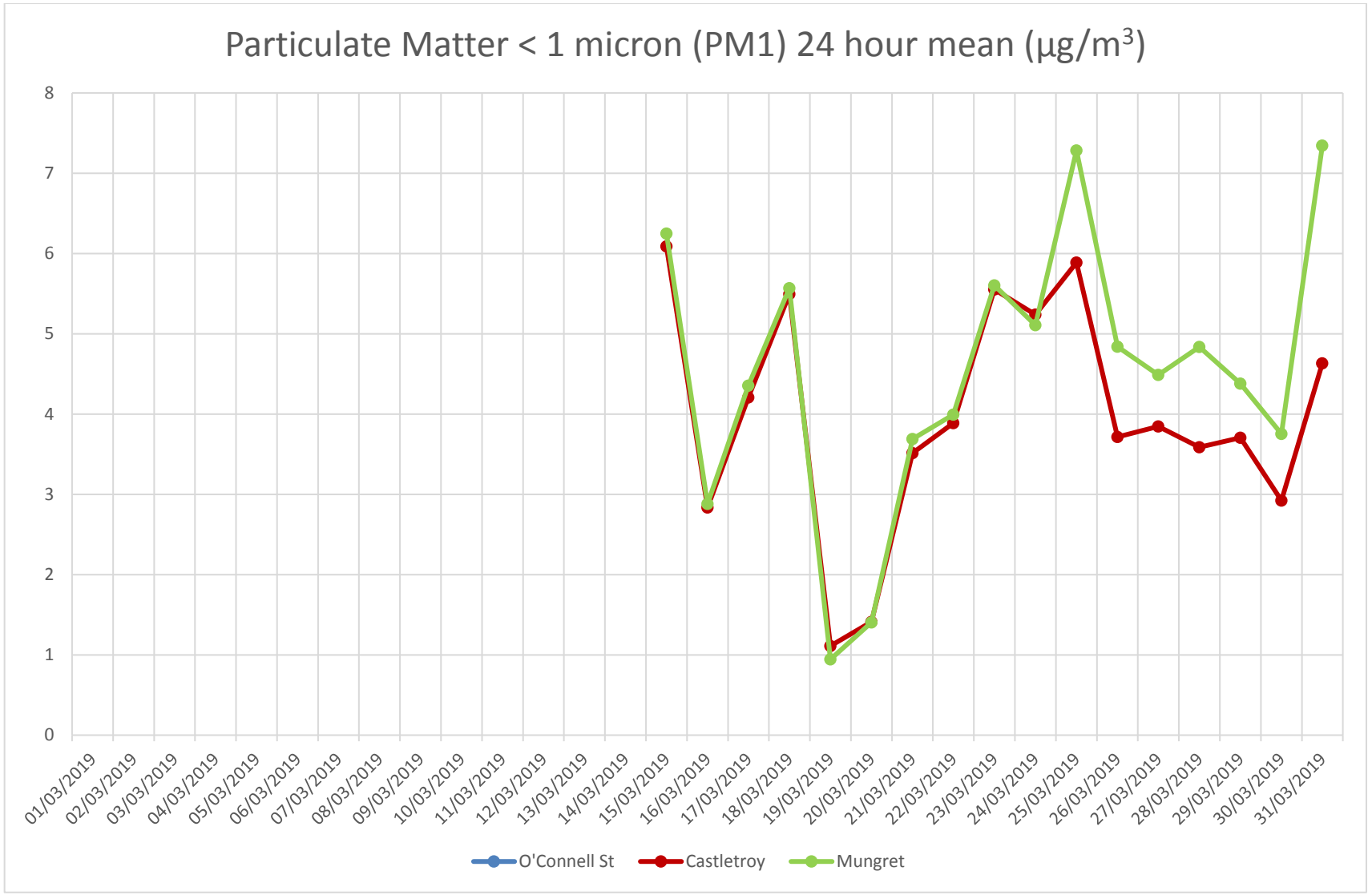
29/03/2019
30/03/2019
31/03/2019
O'Connell St
Castletroy
Mungret
WHO guideline


Particulate Matter < 1 micron (PM1) 24 hour mean (µg/m3)
8
7
6
5
4
3
2
1
0
01/03/2019
02/03/2019
03/03/2019
04/03/2019
05/03/2019
06/03/2019
07/03/2019
08/03/2019
09/03/2019
10/03/2019
11/03/2019
12/03/2019
13/03/2019
14/03/2019
15/03/2019
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17/03/2019
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29/03/2019
30/03/2019
31/03/2019
O'Connell St
Castletroy
Mungret