



UNIVERSITY OF
BIRMINGHAM



**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR ALEXANDER STADIUM**

PREPARED ON: 27th July 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 28/07/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Cloudy
Average temperature (peak)	17 (22) °C
Average wet bulb temperature (peak)	13 (15) °C
Relative Humidity	62%
Wind	7.6 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 26/07/22 – 12:00 27/07/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	13 µg m ⁻³	33 µg m ⁻³ (07:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	46 µg m ⁻³	81 µg m ⁻³ (12:00)	-
Particulate matter (PM _{2.5})	5.4 µg m ⁻³	9.0 µg m ⁻³ (07:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 26/07/22 – 12:00 27/07/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ concentrations are slightly higher than typical modelled levels and PM_{2.5} concentrations were below this value. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

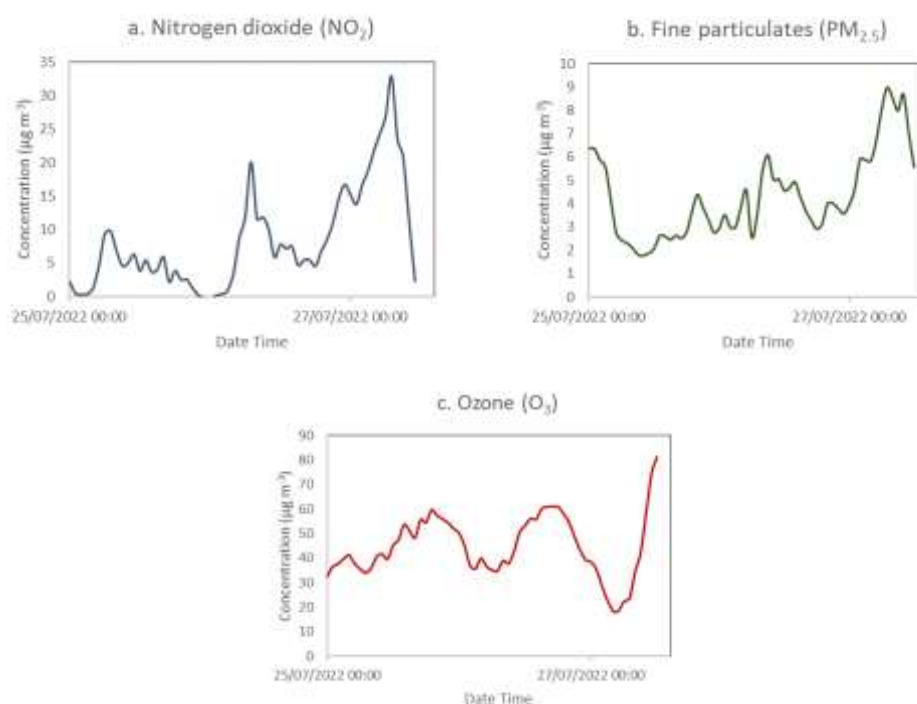


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-27/07/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk/weather/forecast/gcqdt4b2x#?date=2022-07-06>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
- Provisional NO₂, PM_{2.5} and O₃ concentrations measured by the University of Birmingham WM-Air project at the Birmingham Air Quality Supersite (BAQS)
- Modelled data calculated using method described by: Zhong J, Hood C, Johnson K, Stocker J, Handley J, Wolstencroft M, Mazzeo A, Cai X, Bloss WJ. Using Task Farming to Optimise a Street-Scale Resolution Air Quality Model of the West Midlands (UK). *Atmosphere*. 2021; 12(8):983. <https://doi.org/10.3390/atmos12080983>

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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 28th July 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 29/07/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Cloudy changing to sunny intervals by late morning
Average temperature (peak)	19 (23) °C
Average wet bulb temperature (peak)	14 (16) °C
Relative Humidity	60%
Wind	4.8 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 27/07/22 – 12:00 28/07/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	9.6 µg m ⁻³	23 µg m ⁻³ (20:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	52 µg m ⁻³	82 µg m ⁻³ (14:00)	-
Particulate matter (PM _{2.5})	5.3 µg m ⁻³	9.0 µg m ⁻³ (19:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 27/07/22 – 12:00 28/07/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were below typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

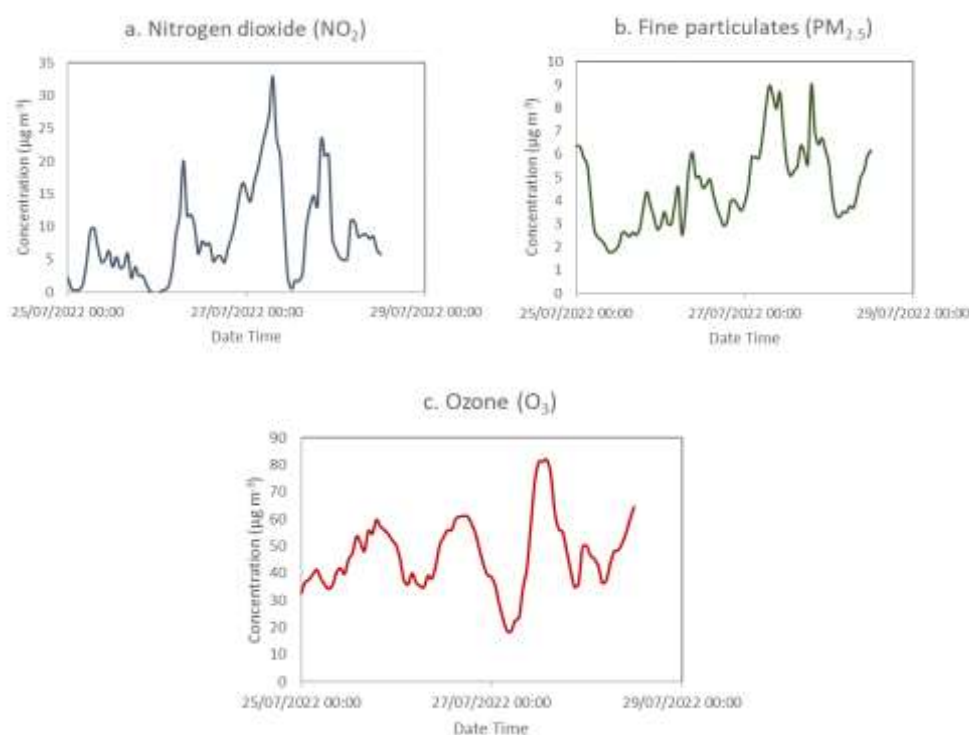


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-28/07/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
- Provisional NO₂, PM_{2.5} and O₃ concentrations measured by the University of Birmingham WM-Air project at the Birmingham Air Quality Supersite (BAQS)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 29th July 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 30/07/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Cloudy
Average temperature (peak)	20 (23) °C
Average wet bulb temperature (peak)	16 (17) °C
Relative Humidity	69%
Wind	8.0 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 28/07/22 – 12:00 29/07/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	7.4 µg m ⁻³	27 µg m ⁻³ (20:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	71 µg m ⁻³	105 µg m ⁻³ (14:00)	-
Particulate matter (PM _{2.5})	5.8 µg m ⁻³	9.9 µg m ⁻³ (19:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 28/07/22 – 12:00 29/07/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were below typical modelled values for this location. Over this period ozone (O₃) concentrations increased, peaking at 105 µg m⁻³.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

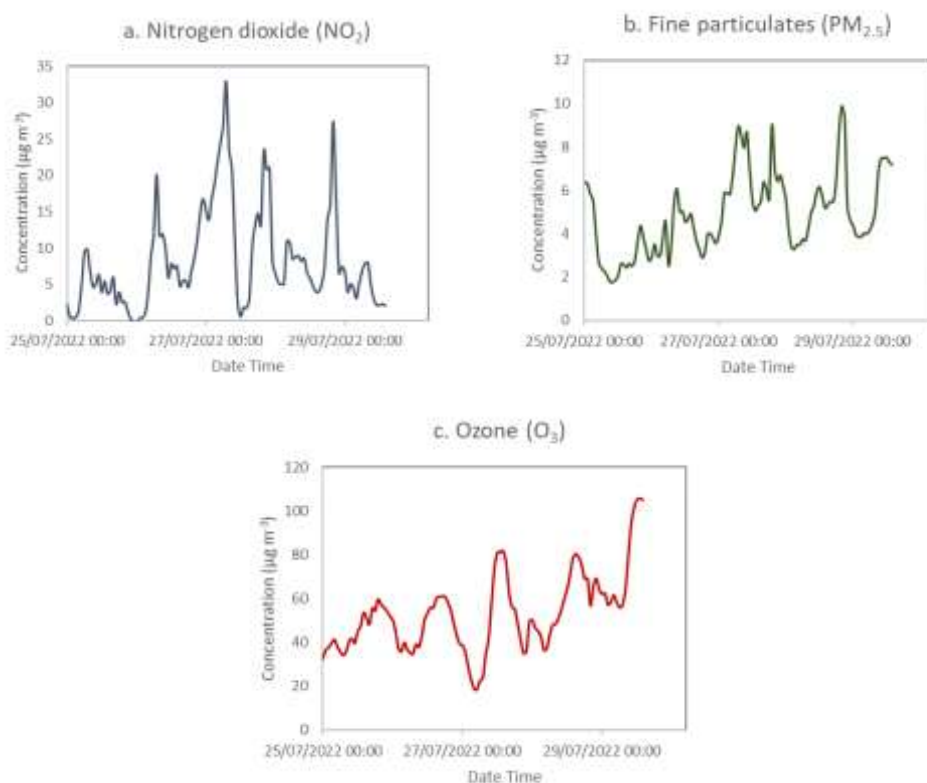


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-29/07/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 30th July 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 31/07/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Heavy showers changing to overcast by midday
Average temperature (peak)	18 (20) °C
Average wet bulb temperature (peak)	16 (18) °C
Relative Humidity	82%
Wind	8.8 mph
Rainfall	Heavy showers in morning, dry in the afternoon
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 29/07/22 – 12:00 30/07/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	13 µg m ⁻³	55 µg m ⁻³ (21:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	70 µg m ⁻³	107 µg m ⁻³ (16:00)	-
Particulate matter (PM _{2.5})	7.0 µg m ⁻³	11 µg m ⁻³ (22:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 29/07/22 – 12:00 30/07/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}) with a large peak in NO₂ at 21:00. NO₂ and PM_{2.5} concentrations were slightly higher than typical modelled values for this location. Over this period ozone (O₃) concentrations showed little change from the previous 24h, peaking at 107 µg m⁻³.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

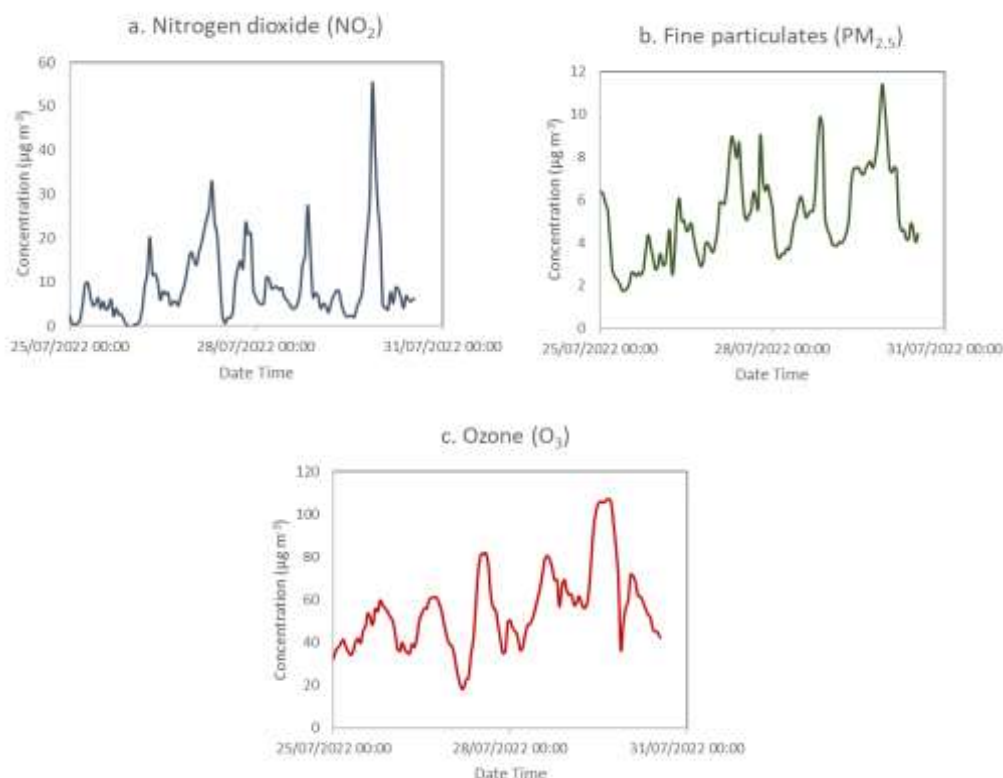


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-30/07/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 31th July 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 01/08/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Cloudy changing to sunny by late morning. Chance of rain in late evening
Average temperature (peak)	18 (23) °C
Average wet bulb temperature (peak)	13 (16) °C
Relative Humidity	62%
Wind	6.5 mph
Rainfall	Dry with rain in late evening
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 30/07/22 – 12:00 31/07/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	4.1 µg m ⁻³	8.2 µg m ⁻³ (21:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	32 µg m ⁻³	49 µg m ⁻³ (16:00)	-
Particulate matter (PM _{2.5})	2.8 µg m ⁻³	4.8 µg m ⁻³ (22:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 30/07/22 – 12:00 31/07/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were low.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

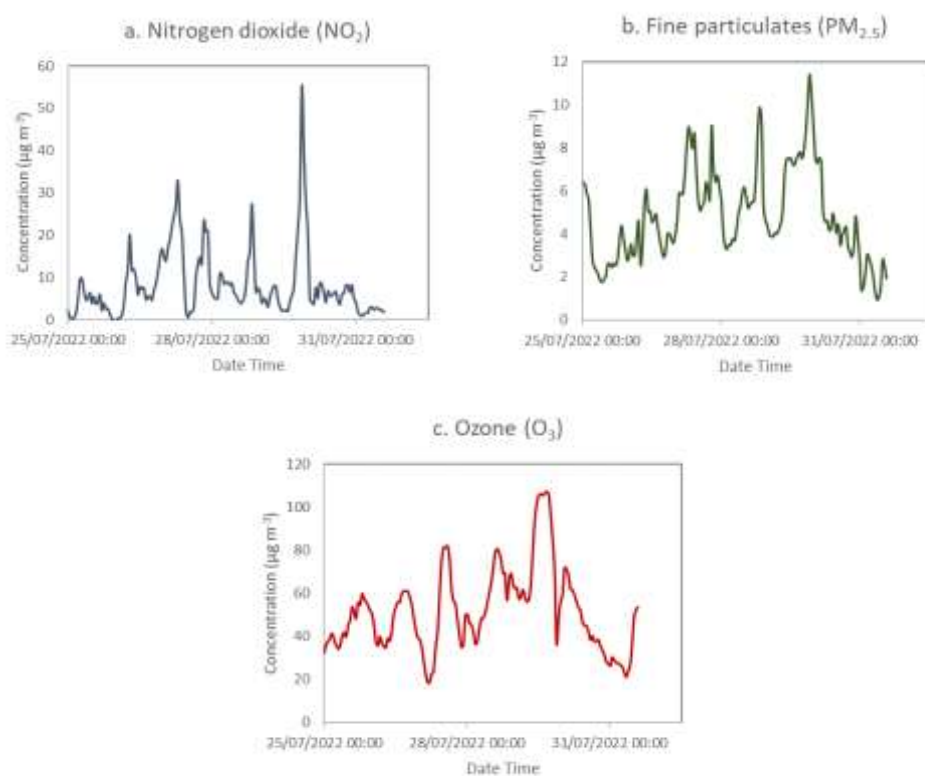


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-31/07/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 1st August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 02/08/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Overcast
Average temperature (peak)	20 (22) °C
Average wet bulb temperature (peak)	17 (19) °C
Relative Humidity	83%
Wind	13 mph
Rainfall	Dry with chance of rain in early morning
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 31/07/22 – 12:00 01/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	6.8 µg m ⁻³	18.8 µg m ⁻³ (21:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	49 µg m ⁻³	70 µg m ⁻³ (16:00)	-
Particulate matter (PM _{2.5})	3.2 µg m ⁻³	4.3 µg m ⁻³ (22:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 31/07/22 – 12:00 01/08/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

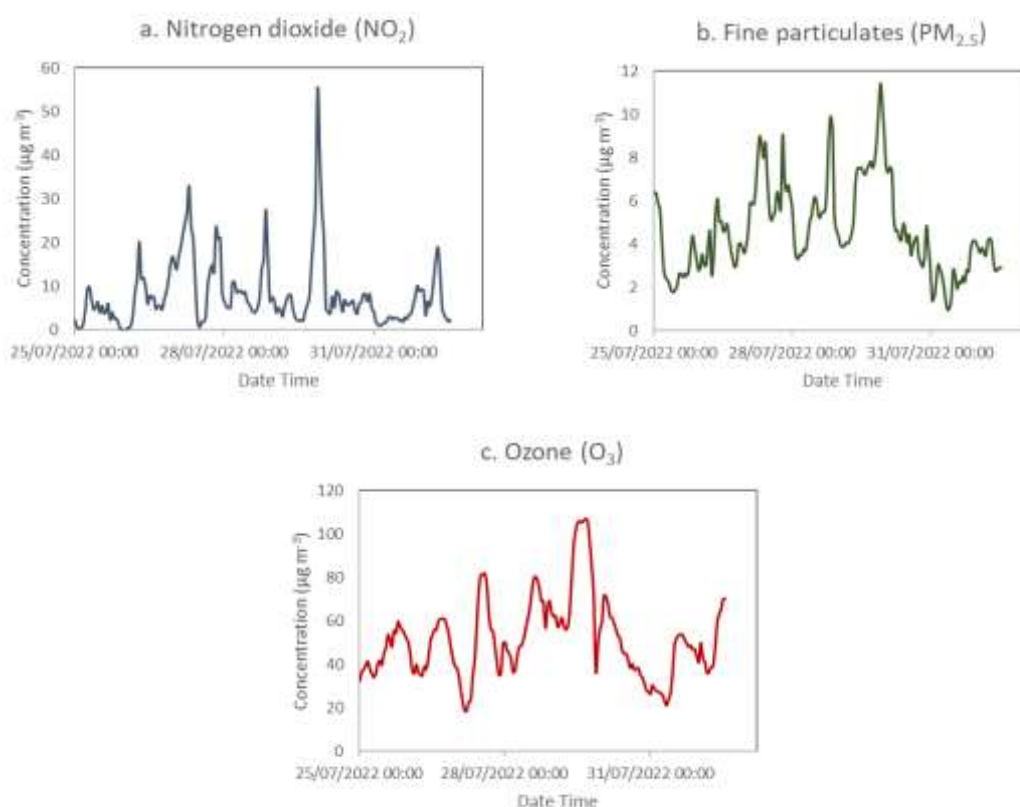


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-01/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 2st August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 03/08/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Cloudy with sunny intervals
Average temperature (peak)	20 (24) °C
Average wet bulb temperature (peak)	16 (17) °C
Relative Humidity	66%
Wind	11 mph
Rainfall	Dry with chance of showers in late morning
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 01/08/22 – 12:00 02/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	4.5 µg m ⁻³	8.1 µg m ⁻³ (20:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	39 µg m ⁻³	77 µg m ⁻³ (18:00)	-
Particulate matter (PM _{2.5})	3.3 µg m ⁻³	10.8 µg m ⁻³ (11:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 01/08/22 – 12:00 02/08/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

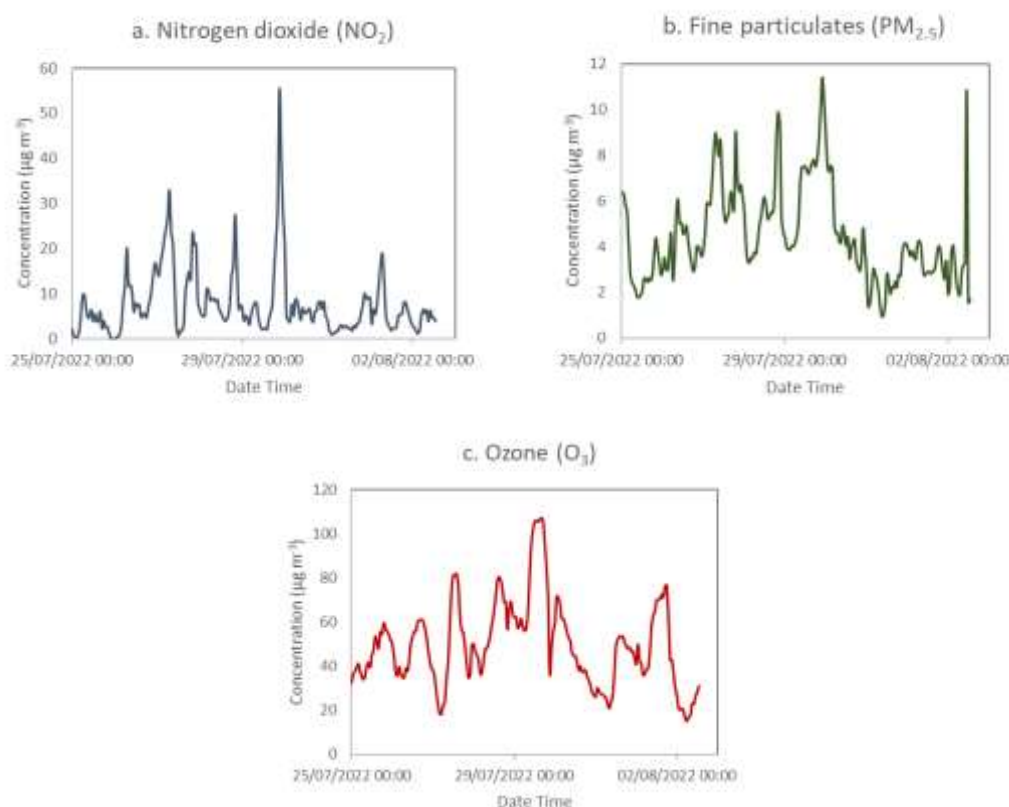


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-02/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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UNIVERSITY OF
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 3rd August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 04/08/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Sunny, becoming cloudy at midday
Average temperature (peak)	17 (20) °C
Average wet bulb temperature (peak)	12 (13) °C
Relative Humidity	59%
Wind	9.5 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 02/08/22 – 12:00 03/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	3.2 µg m ⁻³	7.7 µg m ⁻³ (08:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	30 µg m ⁻³	53 µg m ⁻³ (12:00)	-
Particulate matter (PM _{2.5})	1.8 µg m ⁻³	3.7 µg m ⁻³ (12:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 02/08/22 – 12:00 03/08/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were low.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

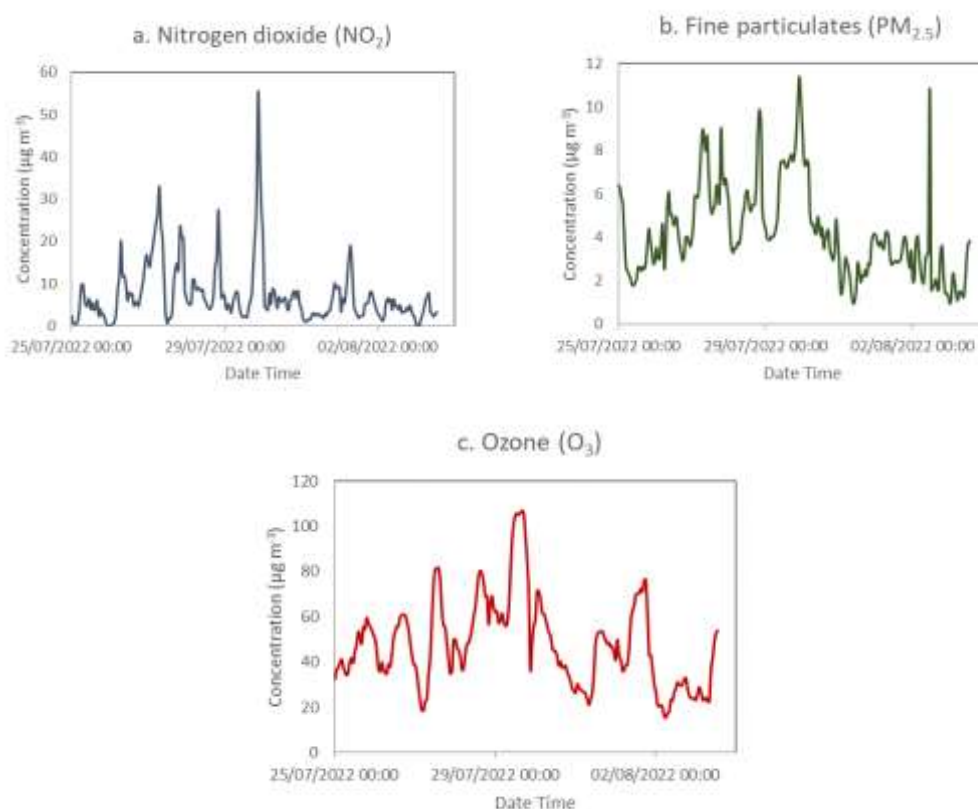


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-03/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 4th August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 05/08/22
Air Pollution (Air Quality Index)	2 (Low)
Weather Conditions	Sunny, becoming cloudy at midday
Average temperature (peak)	15 (19) °C
Average wet bulb temperature (peak)	10 (11) °C
Relative Humidity	57%
Wind	8.6 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 03/08/22 – 12:00 04/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	6.5 µg m ⁻³	18 µg m ⁻³ (06:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	45 µg m ⁻³	62 µg m ⁻³ (12:00)	-
Particulate matter (PM _{2.5})	4.7 µg m ⁻³	6.8 µg m ⁻³ (22:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 03/08/22 – 12:00 04/08/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}). NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

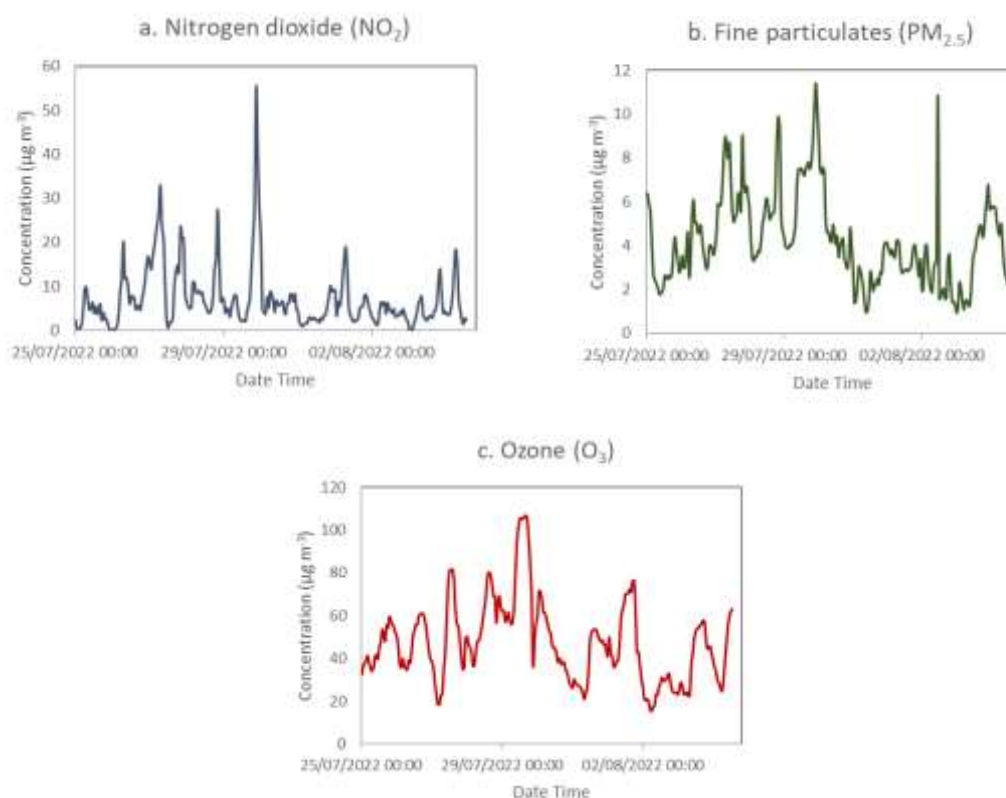


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-04/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
- Provisional NO₂, PM_{2.5} and O₃ concentrations measured by the University of Birmingham WM-Air project at the Birmingham Air Quality Supersite (BAQS)
- Modelled data calculated using method described by: Zhong J, Hood C, Johnson K, Stocker J, Handley J, Wolstencroft M, Mazzeo A, Cai X, Bloss WJ. Using Task Farming to Optimise a Street-Scale Resolution Air Quality Model of the West Midlands (UK). *Atmosphere*. 2021; 12(8):983. <https://doi.org/10.3390/atmos12080983>

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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 5th August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 06/08/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Sunny in the morning becoming cloudy in the afternoon
Average temperature (peak)	16 (21) °C
Average wet bulb temperature (peak)	11 (13) °C
Relative Humidity	59%
Wind	5.8 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 04/08/22 – 12:00 05/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	5.5 µg m ⁻³	12 µg m ⁻³ (05:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	51 µg m ⁻³	63 µg m ⁻³ (13:00)	-
Particulate matter (PM _{2.5})	3.9 µg m ⁻³	15 µg m ⁻³ (08:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 04/08/22 – 12:00 05/08/22) showed low concentrations of nitrogen dioxide (NO₂) and fine particulate matter (PM_{2.5}) with a large peak in PM_{2.5} concentrations at 8am. Average NO₂ and PM_{2.5} concentrations were lower than typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

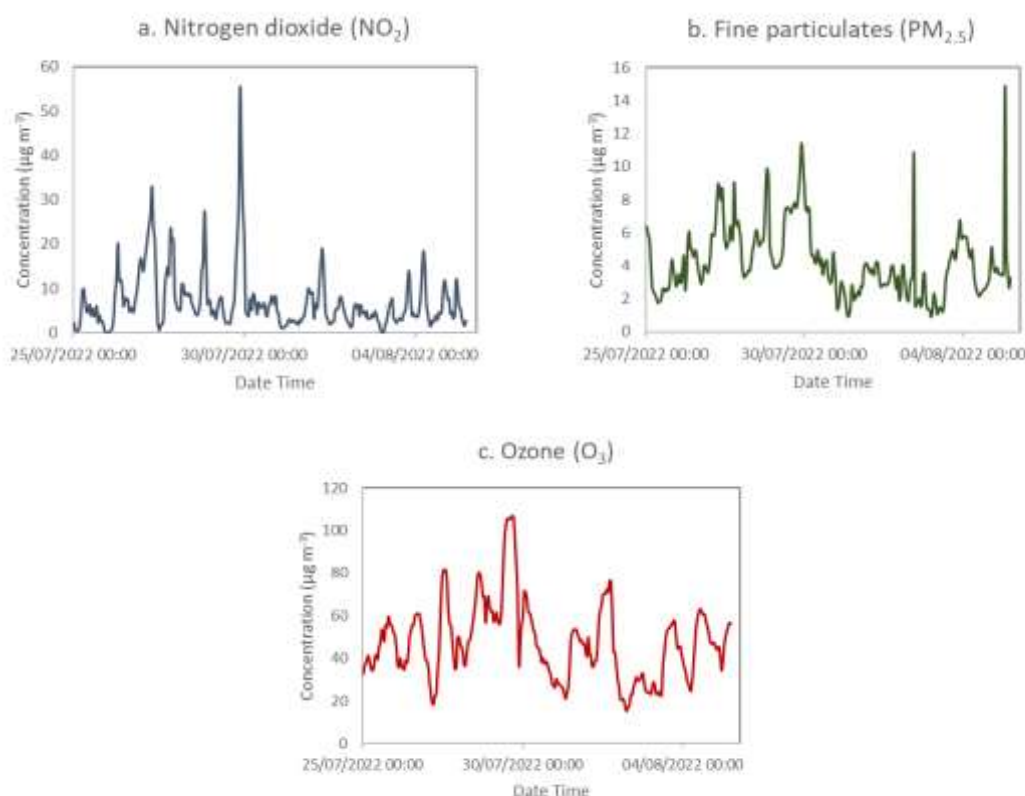


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-05/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
- Provisional NO₂, PM_{2.5} and O₃ concentrations measured by the University of Birmingham WM-Air project at the Birmingham Air Quality Supersite (BAQS)
- Modelled data calculated using method described by: Zhong J, Hood C, Johnson K, Stocker J, Handley J, Wolstencroft M, Mazzeo A, Cai X, Bloss WJ. Using Task Farming to Optimise a Street-Scale Resolution Air Quality Model of the West Midlands (UK). *Atmosphere*. 2021; 12(8):983. <https://doi.org/10.3390/atmos12080983>

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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 6th August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 07/08/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Sunny
Average temperature (peak)	18 (23) °C
Average wet bulb temperature (peak)	13 (15) °C
Relative Humidity	58%
Wind	5.6 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 05/08/22 – 12:00 06/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	6.1 µg m ⁻³	16 µg m ⁻³ (05:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	48 µg m ⁻³	63 µg m ⁻³ (12:00)	-
Particulate matter (PM _{2.5})	7.7 µg m ⁻³	12 µg m ⁻³ (02:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 05/08/22 – 12:00 06/08/22) showed low concentrations of nitrogen dioxide (NO₂). Fine particulate matter (PM_{2.5}) was low but has increased from the previous 24h. Average NO₂ concentrations were lower than typical modelled values for this location, PM_{2.5} concentrations were slightly higher than the typical modelled values. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

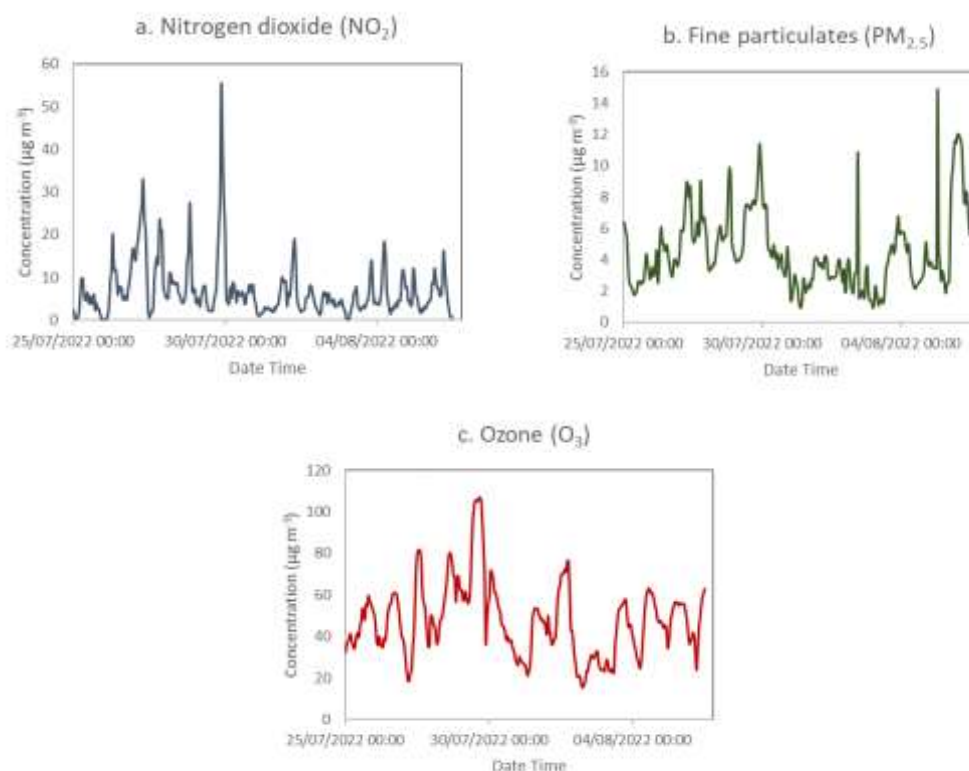


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-06/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
- Provisional NO₂, PM_{2.5} and O₃ concentrations measured by the University of Birmingham WM-Air project at the Birmingham Air Quality Supersite (BAQS)
- Modelled data calculated using method described by: Zhong J, Hood C, Johnson K, Stocker J, Handley J, Wolstencroft M, Mazzeo A, Cai X, Bloss WJ. Using Task Farming to Optimise a Street-Scale Resolution Air Quality Model of the West Midlands (UK). *Atmosphere*. 2021; 12(8):983. <https://doi.org/10.3390/atmos12080983>

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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 7th August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 08/08/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Sunny with cloud at midday
Average temperature (peak)	19 (25) °C
Average wet bulb temperature (peak)	14 (15) °C
Relative Humidity	61%
Wind	5.0 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 06/08/22 – 12:00 07/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	13 µg m ⁻³	39 µg m ⁻³ (02:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	42 µg m ⁻³	68 µg m ⁻³ (14:00)	-
Particulate matter (PM _{2.5})	4.4 µg m ⁻³	6.6 µg m ⁻³ (01:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 06/08/22 – 12:00 07/08/22) showed low concentrations of fine particulate matter (PM_{2.5}). The 24h average nitrogen dioxide (NO₂) concentration was low but had increased from the previous 24h with a night-time peak of 39 µg m⁻³. Average NO₂ concentrations were higher than typical modelled values for this location, PM_{2.5} concentrations were below the typical modelled values. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

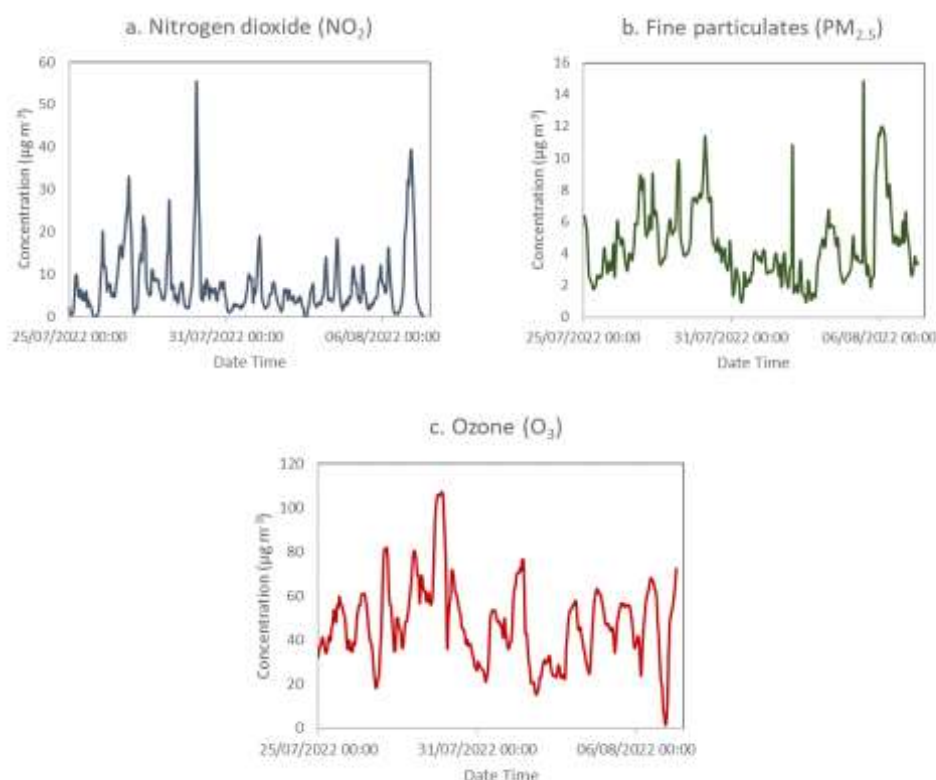


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-07/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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**COMMONWEALTH GAMES
AIR QUALITY UPDATE FOR BIRMINGHAM**

PREPARED ON: 8th August 2022

General Weather Conditions from Met Office, AQI from DEFRA

PARAMETER	FORECAST FOR 09/08/22
Air Pollution (Air Quality Index)	3 (Low)
Weather Conditions	Sunny
Average temperature (peak)	21 (27) °C
Average wet bulb temperature (peak)	14 (16) °C
Relative Humidity	53%
Wind	4.7 mph
Rainfall	Dry
<p>POTENTIAL IMPACTS: Local air quality is good and will not impact performance. Mild temperatures provide good conditions and may favour quicker performances for endurance events.</p>	

Summary of provisional air quality at Edgbaston 12:00 07/08/22 – 12:00 08/08/22

PARAMETER	24h mean concentration	24h peak concentration	Typical summer concentration*
Nitrogen dioxide (NO ₂)	13 µg m ⁻³	28 µg m ⁻³ (06:00)	10.4 µg m ⁻³ (daytime average)
Ozone (O ₃)	43 µg m ⁻³	75 µg m ⁻³ (15:00)	-
Particulate matter (PM _{2.5})	6.3 µg m ⁻³	12.3 µg m ⁻³ (05:00)	5.9 µg m ⁻³ (daytime average)

*based on WM-Air modelling

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Appendix

For context provisional air quality measured at the University of Birmingham over Commonwealth Games period is provided below. Air quality measurements at the University of Birmingham (provisional data) over the previous 24h (12:00 07/08/22 – 12:00 08/08/22) showed low concentrations of fine particulate matter (PM_{2.5}) and nitrogen dioxide (NO₂). Average NO₂ and PM_{2.5} concentrations were higher than typical modelled values for this location. Ozone (O₃) concentrations were moderate.

For context the national (England) air quality objectives for NO₂ and PM_{2.5} are annual means of 40 µg m⁻³ and 20 µg m⁻³ respectively. For O₃ the objective is for 100 µg m⁻³ (8h mean) not to be exceeded more than 10 times a year.

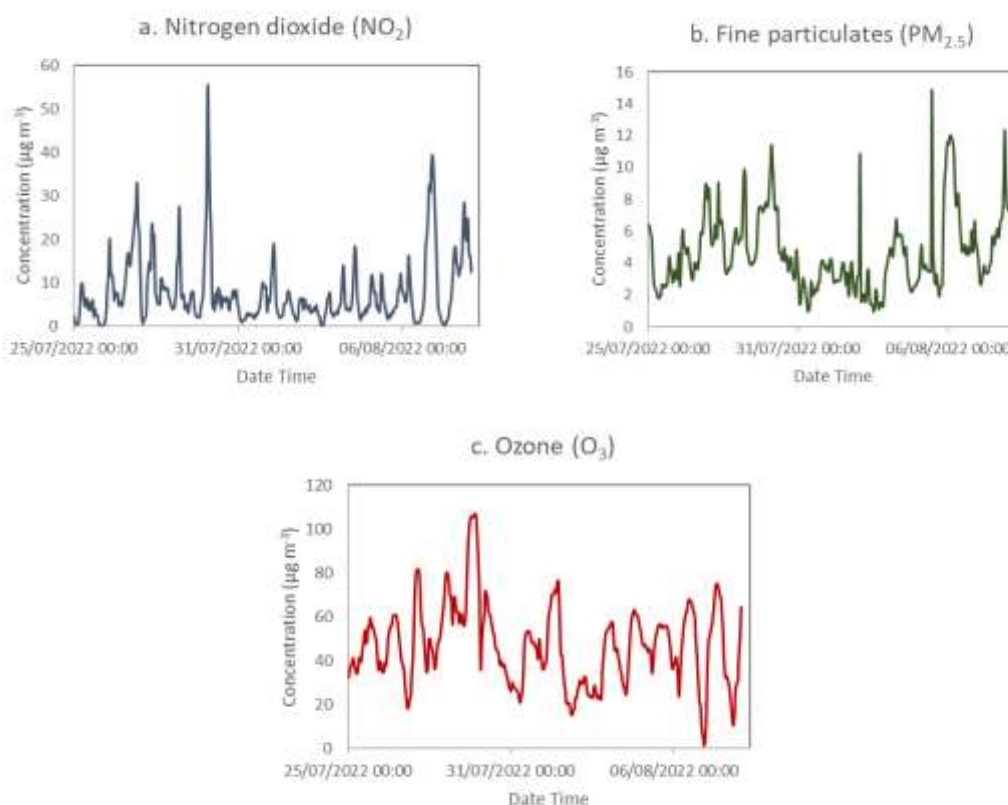


Figure 1: Provisional nitrogen dioxide (a), fine particulate (b) and ozone (c) concentrations recorded at the University of Birmingham (25/07/22-08/08/22)

Data sources

- Meteorological data: Met Office forecast (available at <https://www.metoffice.gov.uk>)
- Air quality Index forecast: DEFRA UK-Air information resource (available at: <https://uk-air.defra.gov.uk/forecasting/>)
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