

AIR QUALITY ASSESSMENT

on behalf of

REDBANK MANCHESTER LTD

for

JEFFERSON PLACE, MANCHESTER

REPORT DATE: 30TH SEPTEMBER 2021

REPORT NUMBER: 102624

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Summary

This air quality technical note is submitted to accompany an appeal concerning the refusal of a planning application for the change of use of a storeroom to a residential apartment (Application Ref 129542/FO/2021, refusal date: 6 April 2021).

The refusal states “[...] a window which is also located adjacent to the car park entrance would be particularly effected by noise, disturbance and fumes which would also contribute to the poor standard of accommodation”. Air quality is not specifically mentioned, however, fume is and is presumed to be associated with vehicle emissions associated with the use of the car park entrance outside the proposed apartment.

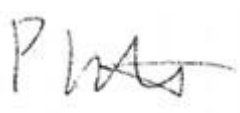
Background air pollutions concentrations modelled by Defra, nearby NO₂ monitoring and the Defra NO₂ Fall off With Distance Calculator all indicate that the intermittent and short timescales involved in accessing and egressing the adjacent car park will not have an adverse effect on air quality within the proposed dwelling. Nevertheless, a mechanical ventilation system is proposed within the proposed development. This system will protect future occupants from any potential air quality issues arising from the use of the car park.

Whilst air quality is a material consideration in the planning decision process, the inclusion of mechanical ventilation into the design of the site, which can be secured by a suitably worded planning condition, will ensure future occupants are not adversely affected by potential poor air quality. There is no reason, in terms of air quality, why the development should not proceed.

Prepared By Philip Walton

Reviewed By Lesley Goodall

Signed



Signed



Date

30th September 2021

Date

30th September 2021

Record of changes

Version	Date	Change	Initials
1	30th September 2021	First issue	PW

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1 Introduction

1.1 This technical note is submitted concerning a planning appeal regarding the refusal of planning permission for the change of use of a storeroom to a residential apartment (Ref 129542/FO/2021, refusal date: 6 April 2021) by Manchester City Council.

1.2 The reason listed for refusal is:

"1) The creation of a one-bedroom apartment would result in an unacceptable standard of living accommodation for the proposed occupants and would not have a positive impact on the supply of high quality homes in this part of the city centre. Small windows would provide the only source of light and ventilation to the apartment, and the door and a window which is also located adjacent to the car park entrance would be particularly effected by noise, disturbance and fumes which would also contribute to the poor standard of accommodation. The proposal would therefore have an unduly harmful impact on residential amenity by not meeting the required standard of accommodation. The proposal therefore conflicts with policies SP1, CC3, H3 and DM1 of the Manchester Core Strategy (2012), saved policy DC5 and DC26 of the Unitary Development Plan for the City of Manchester (1995), the Residential Quality Guide (2019) and the National Planning Policy Framework."

1.3 The refusal states "[...] a window which is also located adjacent to the car park entrance would be particularly effected by noise, disturbance and fumes which would also contribute to the poor standard of accommodation". Air quality is not specifically mentioned, however, fume is. It is presumed that in this instance that fume refers to the potential vehicular emissions impact associated with the car park entrance.

1.4 This technical note addresses air quality. A review is undertaken to conclude whether the effects of air quality on the development are significant and whether the development is able to proceed in relation to air quality effects.

1.5 The emissions (i.e. fumes) emitted from vehicles using the car park are those regulated as part of Local Air Quality Management; nitrogen dioxide (NO₂) and particulate matter (PM₁₀ & PM_{2.5}). These are the main pollutants of concern in relation to vehicular emissions. This assessment has therefore focused on the impact of the proposed development on concentrations of NO₂, PM₁₀ and PM_{2.5}.

2 Site Description

2.1 The site is located approximately 50 m from the A665 (Cheetham Hill Road) within Manchester City Centre at Jefferson Place, Manchester, M4 4AZ. It is currently an unused storeroom within what is formerly referred to as 'Block 4' of the larger Green Quarter development towards the centre of Manchester.

2.2 Adjacent to the site is a perforated steel roller shutter door used to access the off-street car park associated with Jefferson Place. Existing apartments are located on the upper floors of the building, including the floor above the site, some of which overlook the car park entrance.

2.3 We understand that all existing apartments within Jefferson Place are provided with;

- continuous mechanical ventilation in the form of Nuaire's MEV-S units; and,
- standard thermal double glazing.

-
- 2.4 Jefferson place is surrounded, primarily, by residential development within the wider Green Quarter development. A Texaco petrol filling station and Cheetham Hill Road (A665) are located to the west at an elevated level compared to that of the site.
- 2.5 The proposed development is partially located within an AQMA. The AQMA boundaries were declared based on modelling undertaken by Transport for Greater Manchester. All locations that were above a concentration of 35 µg/m³ for NO₂ in the model, were declared as an AQMA. Therefore, the siting of the AQMA does not automatically imply the area is above the air quality objectives.
- 2.6 The proposed design is shown in **Appendix A**. A photograph showing the site location is shown in **Appendix B**.

3 Proposed Development

- 3.1 The proposal is for a change of use from a storeroom to a 1-bedroom apartment. Floor plans of the proposed development show that:
- the apartment will be provided with windows on the north-facing elevation, well away from the car park entrance.
 - access to the apartment will be via a lobbied entrance.
- 3.2 Appropriate continuous mechanical ventilation will also be incorporated into the site, such as Nuaire's MEV-S system (or similar) as already provided for existing apartments within Jefferson Place that have windows overlooking the car park entrance.
- 3.3 No new external amenity spaces are proposed.

4 Policy Context

4.1 Air Quality Objectives

- 4.1.1 The standards and objectives relevant to the Local Air Quality Management (LAQM) framework have been prescribed through the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations 2002; the Air Quality Standards Regulations 2010 set out the combined Daughter Directive limit values and interim targets for Member State compliance. The UK left the EU on 31st January 2020 and is no longer a member state. However, the current framework of air quality legislation was converted into domestic law through the European Union (Withdrawal) Act 2018¹.
- 4.1.2 The current air quality standards and objectives (for the purpose of LAQM) are presented in
- 4.1.3 **Table 1.** Pollutant standards relate to ambient pollutant concentrations in air, set on the basis of medical and scientific evidence of how each pollutant affects human health. Pollutant objectives, however, incorporate target dates and averaging periods which take into account economic considerations, practicability and technical feasibility.

¹ UK Parliament. (2018): <http://www.legislation.gov.uk/ukpga/2018/16/contents/enacted>

Table 1: Air Quality Strategy Objectives (England) for the Purposes of Local Air Quality Management

Pollutant	Air Quality Objective	
	Concentration	Measured As*
Nitrogen dioxide (NO ₂)	200 µg/m ³	1-hour mean not to be exceeded more than 18 times per year
	40 µg/m ³	Annual mean
Particles (PM ₁₀)	50 µg/m ³	24-hour mean not to be exceeded more than 35 per year
	40 µg/m ³	Annual mean
Particles (PM _{2.5})	25 µg/m ³	Annual mean (target) (encouraged in Wales)
	15% cut in annual mean (urban background exposure)	

4.1.4 Where an air quality objective is unlikely to be met by the relevant deadline, local authorities must designate those areas as Air Quality Management Areas (AQMA) and take action to work towards meeting the objectives. Following the designation of an AQMA, local authorities are required to develop an Air Quality Action Plan (AQAP) to work towards meeting the objectives and to improve air quality locally.

4.1.5 Possible exceedances of air quality objectives are generally assessed in relation to those locations where members of the public are likely to be regularly present and are likely to be exposed for a period of time appropriate to the averaging period of the objective.

5 Baseline Air Quality

5.1 Background Concentrations

5.1.1 There are no representative background monitoring locations in the vicinity of the proposed development site. Background concentrations of NO₂, PM₁₀ and PM_{2.5} have, therefore, been obtained from the background concentration maps provided by Defra for the grid squares covering the proposed development and receptor locations². These are shown in **Table 2** below.

² <http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018>

Table 2: Background Pollutant Concentrations Obtained for the 1km x 1km Grid Squares Covering the Site and Receptor Locations*

Grid Square	Pollutant	2021
		($\mu\text{g}/\text{m}^3$)
384500, 399500	NO ₂	20.34
	PM ₁₀	12.13
	PM _{2.5}	7.94

5.1.2 The background concentrations identified indicate that the concentrations are well below the respective 40 $\mu\text{g}/\text{m}^3$ air quality objectives and 25 $\mu\text{g}/\text{m}^3$ target level.

5.2 Local Air Monitoring

Nitrogen Dioxide (NO₂)

5.2.1 MCC does not operate an air quality monitor at the site, but there are several nearby that are positioned along similar roads to that which the site is near. Several non-automatic diffusion tubes are present within 2 km of the site, at similar locations as the site i.e. on A-roads leading out of the city centre.

5.2.2 Salford 14 is located approximately 1.8 km to the north-west of the site on A56 (Bury New Road). The A56 is a north westerly route out of the city centre.

5.2.3 Manchester 36 is located approximately 1.2 km to the northeast of the site on A694 (Rochdale Road). The A694 is a north easterly route out of the city centre.

5.2.4 The results from these monitoring points are shown in **Table 3**.

Table 3: Annual Mean NO₂ Concentrations Monitored by SCC Near the Site

Site ID and Type	Location		Concentrations ($\mu\text{g}/\text{m}^3$)		
			2018	2019	2020
SA14 (Roadside)	382833	401035	31.6	31.6	21.2
MA36NO (Roadside)	385203	399750	33.1	31.7	24.3
Annual Mean NO ₂ air quality objective			40 $\mu\text{g}/\text{m}^3$		

5.3 Inspection of the local air quality monitoring data near the site, on roads that are considered to be similar to the proposed development site characteristics, would indicate pollutant concentrations at the A665 may be below the annual mean air quality objective.

5.4 Air quality concentrations reduce with distance. The proposed development is located approximately 50 m from the A665, therefore, the concentrations are expected to be much lower than the roadside monitored concentrations above.

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- 5.5 Defra has published the NO₂ Fall-off with Distance Calculator and this has been used to provide an indication of the potential air quality fall off with distance, based on the 2019 MAN36 NO results above and the site location distance to an A-road. Using the data from this monitor, the NO₂ concentration at 50 m from the A694 would be 23.4 µg/m³, representing an approximate 72% reduction over 50 m. The output from the NO₂ Fall-off with Distance Calculator is shown in **Appendix C**.

Particulate Matter (PM₁₀ & PM_{2.5})

- 5.6 MCC undertakes PM₁₀ and PM_{2.5} monitoring, however, none are located in the vicinity of the site. Results from the automatic monitor at Manchester Piccadilly (approximately 1 km to the south east of the site) indicate that levels of PM₁₀ and PM_{2.5} at these locations are well below their respective annual mean objective and target level. In addition, there are no areas of AQMA declared for breaches of PM₁₀ air quality objectives in the Manchester City Centre.

5.7 Transport for Greater Manchester – NO₂ Contour Maps

- 5.7.1 Transport for Greater Manchester (TfGM) has published annual mean NO₂ contour maps for the AQMA declarations. The contour map at the development is shown in **Appendix D**.
- 5.7.2 The TfGM contour map indicates NO₂ concentrations at the site are below the annual mean air quality objective. A NO₂ concentration of approximately 35 µg/m³ is indicated at the development site, based on the 2016 modelling undertaken by TfGM.
- 5.7.3 Pollutant concentrations have reduced with time, due to the removal of polluting vehicles from the fleet and the improvements to background concentrations arising from this. Therefore, in 2021 pollutant concentrations are likely to be lower than they were in 2016.

6 Potential Air Quality Sources

- 6.1 The doorway to the proposed apartment is located within approximately 2 m of the route vehicles use for entering and exiting the car park of the high-rise building. The car park includes automatic-electronic roller shutter doors. Residents that require vehicle access and parking are provided with a fob to open and close the shutter doors on entering and leaving the car park.
- 6.2 The car park is relatively small and only includes 52 car parking spaces at the ground level. It has two levels and two entrances.
- 6.3 Vehicles accessing the car park will need to wait for the shutter doors to open. The timeframe for the opening and closing of the shutter door was measured at 17 seconds during the noise survey. The waiting and subsequent movement of the vehicle are, therefore, likely to be completed within 30 seconds.
- 6.4 The primary source of emissions during this event would be the vehicular emissions associated with the engine idling and slow-moving vehicles entering and exiting the car park (i.e. 5 to 10 mph). This engine idling would occur on both sides of the shutter doors, however, inside the car park, it is likely the vehicle emissions would disperse back into the car park due to the movement of air through the door (i.e. outside to inside airflow movement). The car park is enclosed.

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- 6.5 The apartment access includes a lobby, and two doors (the external door and the internal lobby door). These features are expected to reduce the air quality emissions entering the indoor environment from the outside ambient environment by acting as a block to the airflow.
- 6.6 The use of the car park will vary over the day, with the main use expected around the AM and PM peak periods. For the majority of the day, it is expected that the vehicle movements in and out of the car park will be limited and there could be potentially long periods when no vehicles enter or exit; for example, during the night time period (e.g. 11 pm to 6 am).
- 6.7 Due to the small number of cars accessing and egressing the car park and the short period of time over which they will be present, it is considered that air quality will not be significantly affected at the façade of the proposed dwelling.

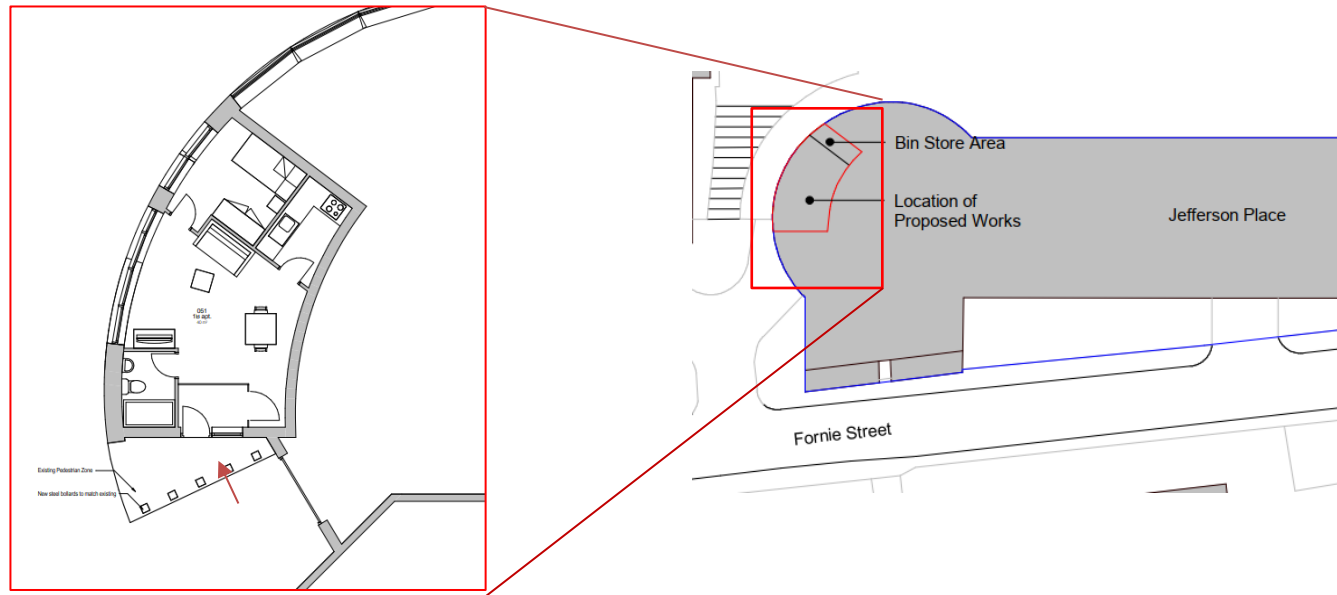
7 Mitigation and Conclusion

- 7.1 A review of the local air quality and potential for vehicle fumes has been undertaken to determine whether future occupants would be exposed to adverse air quality. The air quality review indicates that whilst there is potential for idling vehicles to be present at the car park entrance, these are likely to be few in nature, short term and transient. The proposed development is partially located in an Air Quality Management Area although there is no air quality monitoring undertaken near the site. A review of other, nearby and considered to be representative air quality monitoring locations, would indicate that the annual mean air quality objective is below the annual mean air quality objectives.
- 7.2 The building within which the development is located includes mechanical ventilation on all apartments. This includes the apartments overlooking and adjacent to the car park entrance.
- 7.3 A review of the car park operation has been considered and it is concluded that the use of the car park is for short transient use only. The buildup of adverse air quality concentrations is not expected to occur due to the short duration of vehicles idling and the intermittency of vehicles using the car park over the course of a day.
- 7.4 Nevertheless, mitigation has been concluded to be the most prudent measure to implement at the site, which will reflect the same mitigation design of development that the surrounding existing properties already include.
- 7.5 A mechanical ventilation system is proposed within the proposed development. This system will protect future occupants from any potential air quality issues arising from the use of the car park. The mechanical ventilation unit will be for the apartment-only and is expected to make use of the existing ventilation point on the side of the building. This can be seen in **Appendix B**, the grill to the left of the façade wall and pillar. This faces onto a pedestrian courtyard, therefore, the air drawn in is considered to be suitable for use and not polluted.
- 7.6 **Whilst air quality is a material consideration in the planning decision process, the inclusion of mechanical ventilation into the design of the site, which can be secured by a suitably worded planning condition, will ensure future occupants are not adversely affected by potential poor air quality. There is no reason, in terms of air quality, why the development should not proceed.**

APPENDICES

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Appendix A: Site Design



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Appendix B: Photograph of Site



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Appendix C: NO₂ Fall Off With Distance From Roads Calculator Output



**BUREAU
VERITAS**

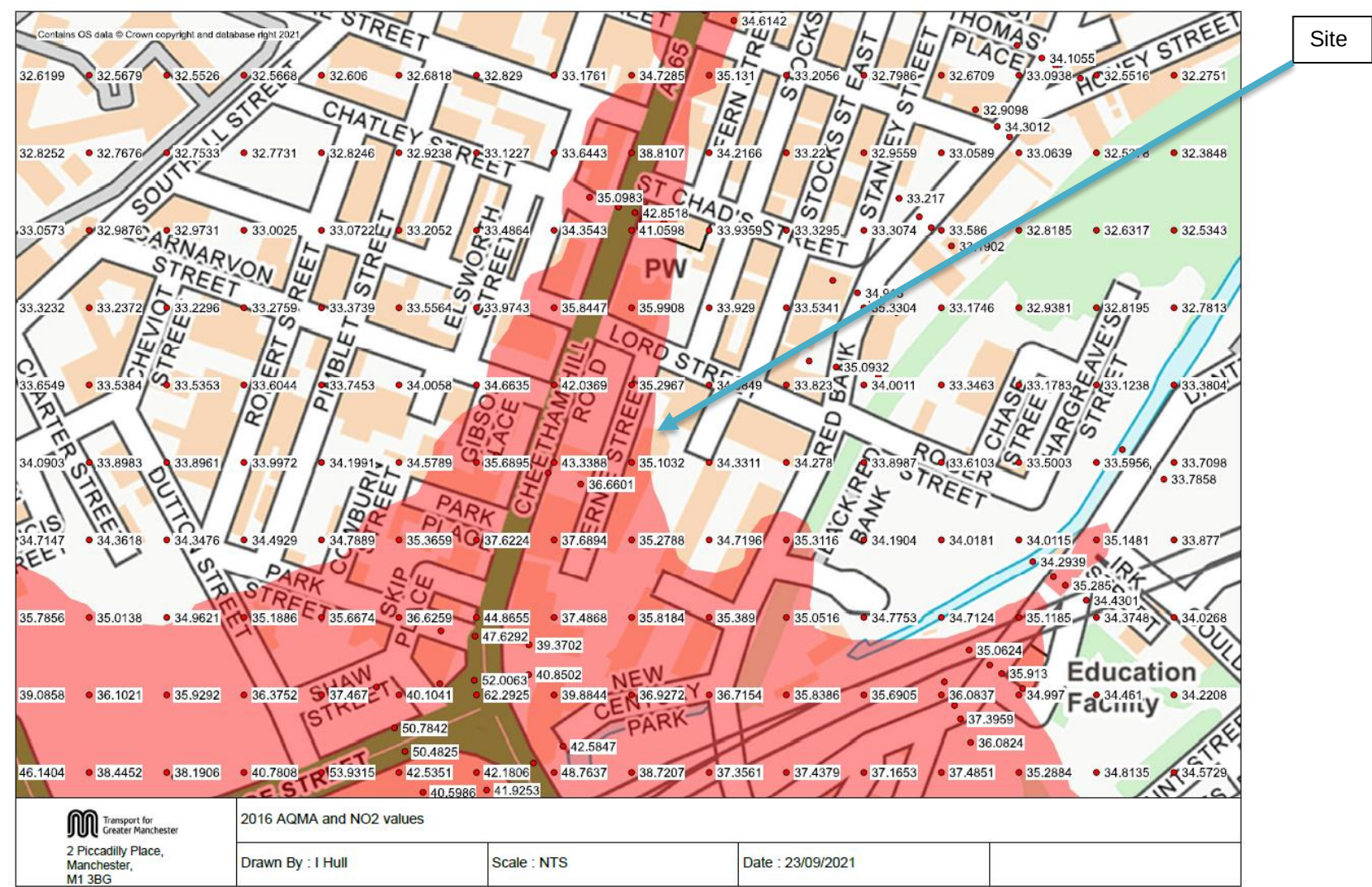
Enter data into the pink cells

Step 1	How far from the KERB was your measurement made (in metres)?	3	metres
Step 2	How far from the KERB is your receptor (in metres)?	50	metres
Step 3	What is the local annual mean background NO ₂ concentration (in µg/m ³)?	20.34	µg/m ³
Step 4	What is your measured annual mean NO ₂ concentration (in µg/m ³)?	31.7	µg/m ³
Result	The predicted annual mean NO ₂ concentration (in µg/m ³) at your receptor	23.4	µg/m ³

Warning: your receptor is more than 20m further from the kerb than your monitor, treat result with caution

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Appendix D: Transport for Greater Manchester NO₂ Contour Plot



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