

Appendix L: Additional information about the impact on air quality on roads

London Borough of Lambeth: Cavendish Road/Poynders Road/Christchurch Road/Thurlow Park Road

1. Introduction

This document provides clarifications in relation to the dispersion modelling of air pollutant emissions carried out to support the ULEZ expansion and the LEZ strengthening (referred to below as the ‘with all proposals’ scenario) proposed for London (see the [full proposals on TfL’s consultation webpage](#)) along the following ULEZ boundary roads in Lambeth:

- Cavendish Road
- Poynders Road
- Christchurch Road
- Thurlow Park Road

The maps showing the location of these roads in relation to the proposed ULEZ boundary are available on our website and can be seen by following the links below:

- [Cavendish Road](#)
- [Poynders Road](#)
- [Christchurch Road](#)
- [Thurlow Park Road](#)

2. Forecast air quality levels with all proposals (NO₂ annual mean concentrations)

The average modelled NO₂ annual mean concentrations along the roads mentioned are provided in the table below, both for the ‘with all proposals’ and baseline 2021 scenarios. Results show that on average, there will be a reduction in NO₂ of about eight to 10 per cent on all roads with all proposals in place compared to forecast baseline levels. This should bring NO₂ concentrations slightly below the Air Quality Strategy (AQS) objective of 40µg/m³ for Cavendish Road and Poynders Road, which are predicted to still exceed in the baseline 2021 scenario. The average NO₂ concentration reduction on these roads is within [3–4] µg/m³.

Table 1: Change in annual mean concentrations: Roads in Lambeth

Road	NO ₂ annual mean concentration (µg/m ³)			
	Baseline 2021	With all proposals 2021	Difference	Difference (%)
Cavendish Road	43.4	39.2	-4.2	-10%
Christchurch Road	39.1	35.9	-3.2	-8%
Poynders Road	41.7	37.9	-3.9	-9%
Thurlow Park Road	39.4	36.1	-3.3	-8%

3. Dispersion modelling assumptions

The above results are based on the dispersion modelling of NO_x emissions sources across London. For road transport emissions, a number of changes were assumed in the ULEZ scenario compared to the baseline, such as changes in traffic flows and vehicle fleet compositions (including Euro standard

fleet composition) for cars, LGVs, HGVs, buses and coaches. A summary of these changes considered for the roads mentioned above is provided below.

3.1. Changes in vehicle kilometres (VKM)

No changes in VKM were considered for LGVs. For cars, a slight decrease of two per cent in VKM was assumed, due to the fact that a number of non-compliant cars could use alternative roads to avoid the ULEZ, or use alternative modes of transport to enter the ULEZ.

3.2. Changes in vehicle compliance for cars and vans (fleet composition)

The Euro standard compliance levels with the ULEZ expansion implemented in 2021 for cars and LGVs were amended as reported in Table 37 in section 6.6 'Boundary impacts' of the supporting information document published for the consultation. The change in compliance is based on assigned boundary route ID 3 (Wandsworth to Forest Hill) in Table 37, which shows a compliance of 89 per cent for cars, and 68 per cent for LGVs.

In comparison, the expected level of compliance within the ULEZ boundary is 93 per cent for cars and 72 per cent for vans respectively.

3.3. Changes in NO_x emissions from road transport

Based on the above, and considering the additional changes in HGVs, buses and coaches due to the strengthening of the LEZ across London, the following changes in NO_x road transport emissions were forecast for 2021.

Table 2: Changes in NO_x emissions: Cavendish Road and Christchurch Road

	NO _x emissions (tonnes/year)					
	Cavendish Road			Christchurch Road		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	0.8	0.7	-14%	1.8	1.5	-14%
LGVs	0.5	0.5	-3%	1.1	1.1	-3%
HGVs	0.2	0.1	-41%	0.3	0.2	-40%
Buses	0.1	0.0	-54%	0.1	0.0	-61%
Coaches	0.3	0.1	-54%	0.0	0.0	-52%
All vehicles (including motorcycles and taxis)	2.0	1.6	-19%	3.8	3.4	-13%

Table 3: Changes in NO_x emissions: Poynders Road and Thurlow Park Road

	NO _x emissions (tonnes/year)					
	Poynders Road			Thurlow Park Road		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	1.4	1.2	-14%	1.3	1.1	-14%
LGVs	0.8	0.8	-3%	1.2	1.1	-3%
HGVs	0.3	0.2	-41%	0.3	0.2	-42%
Buses	0.2	0.1	-51%	0.2	0.1	-73%
Coaches	0.5	0.2	-54%	0.0	0.0	-54%

All vehicles (including motorcycles and taxis)	3.5	2.8	-19%	3.4	2.9	-16%
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Along these roads, vehicle NO_x emissions are forecast to reduce significantly compared to the baseline forecast, from 13 per cent along Christchurch Road, up to 19 per cent along Poynders Road and Cavendish Road.

These reductions are mainly due to the LEZ strengthening, as the reduction in HGV, bus and coach emissions is the most significant. HGV emissions are expected to typically reduce by 40 per cent; bus emissions by 50 per cent minimum, and up to 73 per cent on Thurlow Park Road, whilst NO_x emissions from coaches are expected to reduce by more than 50 per cent on all roads.

London Borough of Lewisham: Catford/Forest Hill/Sydenham

1. Introduction

This document provides clarifications in relation to the dispersion modelling of air pollutant emissions carried out to support the ULEZ expansion and the LEZ strengthening (referred to below as the 'with all proposals' scenario) proposed for London (see the [full proposals on TfL's consultation webpage](#)), along the following ULEZ boundary roads in Lewisham:

- London Road, Waldram Park Road and Waldram Crescent in Forest Hill
- Brownhill Road, Catford Road and Bromley Road in Catford
- Kirkdale and Dartmouth Road in Sydenham

The maps showing the location of these roads in relation to the proposed ULEZ boundary are available on our website and can be seen by following the links below:

- [Roads in Forest Hill](#)
- [Roads in Catford](#)

A similar map for the roads in Sydenham is not available, as it lies further south of the proposed new ULEZ boundary.

2. Forecast air quality levels with all proposals (NO₂ annual mean concentrations)

The average modelled NO₂ annual mean concentrations along the roads mentioned are provided in the table below, both for the 'with all proposals' and baseline 2021 scenarios. For roads in Forest Hill, results show that on average, there will be a reduction of about 10 per cent in NO₂ with all proposals in place compared to forecast baseline levels. In Catford, NO₂ should reduce by 11 per cent, 14 per cent and 19 per cent on Brownhill Road, Catford Road and Bromley Road respectively. Catford Road and Bromley Road are still expected to slightly exceed the AQS objective of 40µg/m³, although the reduction is significant compared to the forecast baseline levels. In Sydenham, reductions in NO₂ should be around 10 per cent, and NO₂ should be well below the AQS objective.

Table 4: Change in annual mean concentrations: Roads in Lewisham

Area	Road	NO ₂ annual mean concentration (µg/m ³)			
		Baseline 2021	With all proposals 2021	Difference	Difference (%)
Forest Hill	London Road	38.4	34.9	-3.4	-9%
	Waldram Park Road	37.8	34.5	-3.3	-9%
	Waldram Crescent	38.2	34.4	-3.9	-10%
Catford	Brownhill Road	41.3	36.6	-4.7	-11%
	Catford Road	47.4	40.9	-6.5	-14%
	Bromley Road	49.3	40.1	-9.2	-19%
Sydenham	Kirkdale	33.2	29.9	-3.3	-10%
	Dartmouth Road	36.1	32.4	-3.6	-10%

3. Dispersion modelling assumptions

The above results are based on the dispersion modelling of NO_x emissions sources across London. For road transport emissions, a number of changes were assumed in the ULEZ scenario compared to the baseline, such as changes in traffic flows and vehicle fleet compositions (including Euro standard

fleet composition) for cars, LGVs, HGVs, buses and coaches. A summary of these changes considered for the roads mentioned above is provided below.

3.1. Changes in vehicle kilometres (VKM)

For cars, a reduction of 2 per cent in VKM was assumed on roads near the ULEZ boundary in Lewisham. For LGVs, an increase in 3 per cent in VKM was assumed.

3.2. Changes in vehicle compliance for cars and vans (fleet composition)

The Euro standard compliance levels with the ULEZ expansion implemented in 2021 for cars and LGVs were amended as reported in Table 37 in section 6.6 'Boundary impacts' of the supporting information document published for the consultation. The change in compliance is based on assigned boundary route ID 4 (Forest Hill to Horn Park) in Table 37, which shows a compliance of 87 per cent for cars, and 63 per cent for LGVs.

In comparison, the expected level of compliance within the ULEZ boundary is 93 per cent for cars and 72 per cent for vans respectively.

3.3. Changes in NO_x emissions from road transport

Based on the above, and considering the additional changes in HGVs, buses and coaches due to the strengthening of the LEZ across London, the following changes in NO_x road transport emissions were forecast for 2021.

Table 5: Changes in NO_x emissions: Forest Hill

	NO _x emissions (tonnes/year)								
	London Road			Waldram Park Road			Waldram Crescent		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	1.0	0.9	-14%	0.4	0.4	-11%	0.2	0.2	-14%
LGVs	0.7	0.6	-4%	0.3	0.3	3%	0.2	0.1	-4%
HGVs	0.3	0.2	-39%	0.1	0.1	-43%	0.1	0.0	-41%
Buses	0.3	0.2	-47%	0.1	0.0	-68%	0.1	0.0	-74%
Coaches	-	-	-	0.0	0.0	-54%	0.0	0.0	-54%
All vehicles (including motorcycles and taxis)	2.5	2.1	-17%	1.0	0.8	-17%	0.5	0.4	-23%

Table 6: Changes in NO_x emissions: Catford

	NO _x emissions (tonnes/year)								
	Brownhill Road			Catford Road			Bromley Road		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	2.3	2.1	-11%	1.5	1.3	-11%	0.5	0.4	-17%
LGVs	1.3	1.3	3%	0.9	0.9	3%	0.2	0.2	-1%
HGVs	0.8	0.5	-42%	0.4	0.2	-38%	0.1	0.0	-38%
Buses	0.9	0.1	-88%	1.2	0.3	-79%	0.5	0.1	-85%
Coaches	0.1	0.0	-54%	-	-	-	0.0	0.0	-54%
All vehicles (including motorcycles and taxis)	6.0	4.6	-24%	4.3	3.0	-29%	1.3	0.7	-43%

Table 7: Changes in NO_x emissions: Sydenham

	NO _x emissions (tonnes/year)					
	Kirkdale			Dartmouth Road		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	1.0	0.9	-15%	1.2	1.0	-18%
LGVs	0.5	0.5	-1%	0.6	0.6	-3%
HGVs	0.1	0.1	-39%	0.2	0.1	-39%
Buses	0.7	0.1	-78%	0.5	0.2	-64%
Coaches	0.1	0.0	-54%	0.0	0.0	-54%
All vehicles (including motorcycles and taxis)	2.5	1.7	-31%	2.6	1.9	-24%

In each area, vehicle NO_x emissions are forecast to reduce significantly compared to the baseline forecast, from 17 per cent along London Road and Waldram Park Road in Forest Hill, up to 43 per cent along Bromley Road in Catford.

These reductions are mainly due to the LEZ strengthening, as the reduction in HGV, bus and coach emissions is the most significant. HGV emissions are expected to typically reduce by 40 per cent; bus emissions by 50 per cent minimum, and up to 90 per cent, depending on bus routes, and NO_x emissions from coaches are expected to reduce by more than 50 per cent on all roads.

London Borough of Richmond upon Thames: Upper Richmond Road West/Upper Richmond Road/Clifford Avenue

1. Introduction

This document provides clarifications in relation to the dispersion modelling of air pollutant emissions carried out to support the ULEZ expansion and the LEZ strengthening (referred to below as the 'with all proposals' scenario) proposed for London (see the [full proposals on TfL's consultation webpage](#)), along the following ULEZ boundary roads in Richmond:

- Upper Richmond Road West
- Upper Richmond Road
- Clifford Avenue

The maps showing the location of these roads in relation to the proposed ULEZ boundary are available on our website and can be seen by following the links below:

- [Upper Richmond Road West](#)
- [Upper Richmond Road/Clifford Avenue](#)

2. Forecast air quality levels with all proposals (NO₂ annual mean concentrations)

The average modelled NO₂ annual mean concentrations along the roads mentioned are provided in the table below, both for the 'with all proposals' and baseline 2021 scenarios. For Upper Richmond Road West and Upper Richmond Road, results show that on average, there will be a reduction of about 17–18 per cent in NO₂ with all proposals in place compared to forecast baseline levels. Although modelled results show that NO₂ concentrations will still be above the AQS objective of 40µg/m³, NO₂ concentrations are forecast to reduce by about 10µg/m³ with all proposals compared to baseline levels in 2021. For Clifford Avenue, a smaller reduction of 12 per cent is forecast, bringing the road just below the AQS objective with all proposals in place.

Table 8: Change in annual mean concentrations: Roads in Richmond

Road	NO ₂ annual mean concentration (µg/m ³)			
	Baseline 2021	With all proposals 2021	Difference	Difference (%)
Upper Richmond Road West	55.3	45.4	-10.0	-18%
Upper Richmond Road	52.3	43.4	-9.0	-17%
Clifford Avenue	44.6	39.2	-5.5	-12%

3. Dispersion modelling assumptions

The above results are based on the dispersion modelling of NO_x emissions sources across London. For road transport emissions, a number of changes were assumed in the ULEZ scenario compared to the baseline, such as changes in traffic flows and vehicle fleet compositions (including Euro standard fleet composition) for cars, LGVs, HGVs, buses and coaches. A summary of these changes considered for the roads mentioned above is provided below.

3.1. Changes in vehicle kilometres (VKM)

No changes in VKM were considered for cars. However, for LGVs, an increase in 20 per cent in VKM was assumed, based on the fact that these roads are a boundary route of the proposed ULEZ extension, which means that van traffic is likely to increase on these roads, as non compliant vans are more likely to use the boundary route to avoid entering the ULEZ..

3.2. Changes in vehicle compliance for cars and vans (fleet composition)

The Euro standard compliance levels with the ULEZ expansion implemented in 2021 for cars and LGVs were amended as reported in Table 37 in section 6.6 'Boundary impacts' of the supporting information document published for the consultation:

- Upper Richmond Road West/Upper Richmond Road (boundary route ID 2 in Table 37): 79 per cent compliance for cars; 51 per cent compliance for LGVs
- Clifford Avenue (boundary route ID 1 in Table 37): 76 per cent compliance for cars; 54 per cent compliance for LGVs

In comparison, the expected level of compliance within the ULEZ boundary is 93 per cent for cars and 72 per cent for vans respectively.

3.3. Changes in NO_x emissions from road transport

Based on the above, and considering the additional changes in HGVs, buses and coaches due to the strengthening of the LEZ across London, the following changes in NO_x road transport emissions were forecast for 2021.

Table 9: Changes in NO_x emissions: Roads in Richmond

	NO _x emissions (tonnes/year)								
	Upper Richmond Road West			Upper Richmond Road			Clifford Avenue		
	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)	Base 2021	With all proposals 2021	Change (%)
Cars	4.2	3.9	-6%	1.9	1.8	-6%	3.8	2.8	-25%
LGVs	1.8	2.3	+29%	0.8	1.0	+29%	1.0	1.1	+4%
HGVs	1.2	0.6	-47%	0.6	0.3	-46%	0.5	0.3	-47%
Buses	4.3	0.3	-93%	1.9	0.1	-93%	0.3	0.0	-89%
Coaches	0.6	0.2	-61%	0.3	0.1	-61%	0.4	0.2	-57%
All vehicles (including motorcycles and taxis)	12.3	7.6	-38%	5.6	3.5	-37%	6.4	4.8	-26%

Car emissions are forecast to reduce slightly with all proposals in 2021 on Upper Richmond Road West and Upper Richmond Road (-six per cent); whilst, on Clifford Avenue, the reduction in car NO_x emissions will be more significant (-25 per cent).

On the other hand LGV emissions are forecast to increase (+29 per cent) on Upper Richmond Road West and Upper Richmond Road, and also to a minor extent (+four per cent) on Clifford Avenue. This is due to the lower level of compliance expected along the roads, as they form part of the ULEZ boundary route, as discussed above. It is notable that on these roads, NO_x emissions from cars will still be greater than emissions from vans.

Due to the LEZ strengthening of Euro standards, emissions from heavy-duty vehicles are forecast to reduce even more significantly on each of these roads (about -45 per cent or more for HGVs; -90 per cent for buses and -60 per cent for coaches). This leads to an overall forecast reduction in total vehicle

NO_x emissions of more than a third (-38 per cent) along Upper Richmond Road / Upper Richmond Road West and a quarter (-26 per cent) on Clifford Avenue, compared to the forecast baseline 2021 emissions. This explains why modelled total NO₂ concentrations are expected to reduce significantly along these roads with all proposals in place by 2021.

Chiswick Roundabout / Chiswick High Road / Kew Bridge Road / Kew Bridge / M4 / A4, Hounslow

1. Introduction

This document provides clarifications in relation to the dispersion modelling of air pollutant emissions carried out to support the ULEZ expansion and the LEZ strengthening (referred to below as the 'with all proposals' scenario) proposed for London (see the [full proposals on TfL's consultation webpage](#)) along the following ULEZ boundary roads in Hounslow:

- Chiswick Roundabout;
- Chiswick High Road / Kew Bridge Road;
- Kew Bridge / Kew Road; and
- The M4 and A4 (Great West Road).

The maps showing the location of these roads in relation to the proposed ULEZ boundary are available on our website and can be seen by following the links below:

- [Chiswick Roundabout / Chiswick High Road / Kew Bridge Road](#)
- [Kew Bridge / Kew Road](#)

A similar map for the M4 / A4 Great West Road is not available, as it lies further west of the proposed new ULEZ boundary.

2. Forecast air quality levels with all proposals (NO₂ annual mean concentrations)

The average modelled NO₂ annual mean concentrations along the roads mentioned are provided in the table below, both for the 'with all proposals' and baseline 2021 scenarios.. For Chiswick Roundabout, Chiswick High Road/Kew Bridge Road north of the river, results show that on average, there will be a reduction of about 16-20 per cent in NO₂ with all proposals in place compared to forecast baseline levels. On Kew Bridge, Kew Road south of the river, the reduction will be slightly lower (14 per cent).

For the M4 between Chiswick Roundabout and the A4 Great West Road, the reduction in NO₂ will be similar to the above roads on the boundary route (16 per cent)

Although modelled results on these roads show that NO₂ levels will still be above the AQS objective of 40µg/m³, concentrations are forecast to reduce by about 7µg/m³ to 10µg/m³ with all proposals compared to baseline levels in 2021.

For the A4 Great West Road, a smaller reduction of 12 per cent (5µg/m³) is forecast, which will bring the road just below the AQS objective with all proposals in place.

Table 10: Change in annual mean concentrations: Roads in Hounslow

Road	NO ₂ Annual Mean Concentration (µg/m ³)			
	Baseline 2021	With All Proposals 2021	Difference	Difference (%)
Chiswick Roundabout	50.8	40.7	-10.1	-20%
Chiswick High Road	50.4	42.5	-7.9	-16%
Kew Bridge Road	48.2	40.1	-8.2	-17%
Kew Bridge / Kew Road	46.7	40.0	-6.7	-14%
M4	53.9	45.2	-8.7	-16%

A4 Great West Road	44.0	38.8	-5.2	-12%
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3. Dispersion modelling assumptions

The above results are based on the dispersion modelling of NO_x emissions sources across London. For road transport emissions, a number of changes were assumed in the ULEZ scenario compared to the baseline, such as changes in traffic flows and vehicle fleet compositions (including Euro standard fleet composition) for cars, LGVs, HGVs, buses and coaches. A summary of these changes considered for the roads mentioned above is provided below.

3.1. Changes in vehicle kilometres (VKM)

For cars, a four per cent reduction in VKM was assumed on these boundary routes. For LGVs, an increase of 15 per cent in VKM was assumed. The decrease in car VKM is due to the fact that a number of non-compliant cars should use alternative roads to avoid the ULEZ, or use alternative modes of transport to enter the ULEZ. For LGVs, non-compliant vans are more likely to use the boundary route to avoid entering the ULEZ, hence the expected increase in VKM for vans on these roads.

3.2. Changes in vehicle compliance for cars and vans (fleet composition)

The Euro standard compliance levels with the ULEZ expansion implemented in 2021 for cars and LGVs were amended as reported in Table 37 in section 6.6 'Boundary impacts' of the supporting information document published for the consultation.

- Chiswick Roundabout (assigned to Boundary Route ID 10 in Table 37): 85 per cent compliance for cars; 65 per cent compliance for LGVs.
- Chiswick High Road / Kew Bridge Road / Kew Bridge (Boundary Route ID 1 in Table 37): 76 per cent compliance for cars; 54 per cent compliance for LGVs.

In comparison, the expected level of compliance within the ULEZ boundary is 93 per cent for cars and 72 per cent for vans respectively.

Compliance levels on the M4 and A4 Great West Road were not reported in Table 37, as the A4 lies further west of the proposed new ULEZ boundary.

3.3. Changes in NO_x emissions from road transport

Based on the above, and considering the additional changes in HGVs, buses and coaches due to the strengthening of the LEZ across London, the following changes in NO_x road transport emissions were forecast for 2021.

Table 11: Changes in NO_x emissions: Chiswick High Road and Chiswick Roundabout

	NO _x Emissions (tonnes/year)					
	Chiswick Roundabout			Chiswick High Road		
	Base 2021	with All Proposals 2021	Change (%)	Base 2021	with All Proposals 2021	Change (%)
Cars	0.35	0.29	-17%	1.0	0.9	-13%
LGVs	0.16	0.18	14%	0.4	0.5	21%
HGVs	0.10	0.06	-44%	0.4	0.2	-40%
Buses	0.50	0.05	-90%	0.7	0.1	-91%
Coaches	0.01	0.00	-61%	0.1	0.0	-57%
All vehicles (including	1.18	0.64	-46%	2.7	1.8	-32%

motorcycles and taxis						
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Table 12: Changes in NO_x emissions Kew Road and Kew Bridge Road

	NO _x Emissions (tonnes/year)					
	Kew Bridge Road			Kew Bridge/ Kew Road		
	Base 2021	with All Proposals 2021	Change (%)	Base 2021	with All Proposals 2021	Change (%)
Cars	0.5	0.4	-17%	2.2	1.9	-13%
LGVs	0.1	0.1	12%	0.8	0.9	21%
HGVs	0.1	0.1	-43%	0.6	0.3	-44%
Buses	0.4	0.0	-90%	1.0	0.1	-91%
Coaches	0.0	0.0	-59%	0.2	0.1	-60%
All vehicles (including motorcycles and taxis)	1.2	0.7	-40%	4.9	3.5	-29%

Table 13: Changes in NO_x emissions M4 and A4

	NO _x Emissions (tonnes/year)					
	M4			A4 Great West Road		
	Base 2021	with All Proposals 2021	Change (%)	Base 2021	with All Proposals 2021	Change (%)
Cars	14.3	10.5	-27%	22.5	19.5	-14%
LGVs	6.6	6.3	-5%	8.5	8.4	-0%
HGVs	2.5	1.2	-51%	3.1	1.5	-52%
Buses	1.6	0.2	-89%	2.8	0.3	-90%
Coaches	1.7	0.7	-61%	2.3	0.9	-61%
All vehicles (including motorcycles and taxis)	28.8	20.9	-27%	40.1	31.4	-22%

For all roads of concern, car emissions are forecast to reduce by -13 per cent to -17 per cent, whilst LGV emissions (apart from the M4 / A4) are forecast to increase within a range of 14-21 per cent, with all proposals in 2021. The increase in LGVs is due to the lower level of compliance for vans expected along the roads, as they form part of the ULEZ boundary route, as discussed above. However, due to the LEZ strengthening of Euro standards, emissions from heavy-duty vehicles are forecast to reduce even more significantly on each of these roads (about 40-45 per cent for HGVs; 90 per cent for buses and -60 per cent for coaches). This leads to an overall forecast reduction in total vehicle NO_x emissions of 46 per cent on Chiswick Roundabout and a reduction of 30-40 per cent on Chiswick High Road, Kew Bridge and Kew Road compared to the forecast baseline 2021 emissions.

The A4 will see similar reductions in NO_x emissions from cars. Whilst it should however not experience any significant change in LGV emissions, overall heavy vehicle emissions should again reduce significantly, due to significant reductions for buses and coaches (similar to those on the boundary route), and HGVs (with forecast reductions – 50 per cent - even higher than along the boundary route). This leads to an overall reduction in NO_x emissions of more than 20 per cent on the A4 compared to the baseline 2021 emissions.

The M4 will see a significant reduction in emissions from cars (-27 per cent), and a small reduction in emissions from vans (five per cent). The most significant reduction will again occur for HGVs, with similar reduction levels to those forecast for the A4.

This explains why modelled total NO₂ concentrations are expected to reduce significantly along these roads with all proposals in place by 2021.