HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 2 and Additional Provision 3 Environmental Statement

Volume 5 | Technical appendices

Air quality

AQ-001-001, AQ-001-002, AQ-001-003 and AQ-001-004

September 2015

SES2 and AP3 ES 3.5.1.1

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This table shows the topics covered by the technical appendices in this volume, and the reference codes for them.

CFA name and number	Topic	Code
CFA1, Euston Station and Approach	Air quality	AQ-001-001
CFA2, Camden Town	Air quality	AQ-001-002
CFA3, Primrose Hill to Kilburn (Camden)	Air quality	AQ-001-003
CFA4, Kilburn (Brent) to Old Oak Common	Air quality	AQ-001-004

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AQ-001-001

Environmental topic:	Air quality	AQ
Appendix name:	Data appendix	001
Community forum area:	Euston – Station and Approach	001

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1 Introduction

1.1 Structure of this air quality assessment appendix

1.1.1 This appendix is structured as follows:

- baseline air quality data (Section 2);
- dust impact evaluation and risk rating (Section 3);
- air quality assessment - road traffic (Section 4); and
- air quality assessment - combustion plant (Section 5).

1.1.2 Maps referred to throughout this air quality appendix are contained in the Volume 5 Air Quality Map Book, within this Supplementary Environmental Statement 2 (SES2) and Additional Provision 3 ES (AP3 ES).

1.2 Scope of this assessment

1.2.1 This air quality assessment considers changes to local air quality as a result of:

- changes to the design or construction assumptions which do not require changes to the Bill;
- changes to the design of the scheme that are outside the existing limits of the Bill (i.e. AP3 amendments); and
- updates to traffic models.

Methodology, data sources and design criteria

1.2.2 The assessment scope, key assumptions and limitations and the methodology for determining significance of effects for air quality are as set out in the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES.

2 Baseline air quality data

2.1 Existing air quality

Local authority review and assessment information

2.1.1 London Borough of Camden (LBC) and City of Westminster (WCC) both have designated air quality management areas (AQMAs) covering their entire administrative areas. The entirety of the Euston area is within designated AQMAs.

2.1.2 LBC and WCC both have air quality action plans (AQAPs) in place aimed at improving air quality.

Local air quality monitoring data

2.1.3 Monitoring sites within the study area that are considered relevant for this assessment are shown in Map AQ-01-001 (Volume 5, Air Quality Map Book). Table 1 to Table 4 provide a summary of the recorded pollutant concentrations at these sites.

2.1.4 The pollutant concentrations can be compared to the air quality standards:

- 40µg/m^3 as an annual mean for NO2 and PM10;
- 200µg/m^3 one-hour mean for NO2 not to be exceeded more than 18 times a year (equivalent to the 99.8th percentile of the one-hour mean); and
- 50µg/m^3 24-hour mean of PM10 not to be exceeded more than 35 times a year (equivalent to the 90.4th percentile of the 24-hour mean).

Continuous monitoring

2.1.5 This section summarises the results from the continuous monitoring sites that are considered relevant for the assessment of air quality in this study area.

Table 1 : Annual mean pollutant concentrations recorded at continuous monitoring sites[1]

Pollutant	Annual mean concentrations (µg/m^3)				
	2008	2009	2010	2011	2012
LBC - Bloomsbury (530123, 182014)					
NO2	55	54	55	50	55
PM10	23	23	18	23	19
PM2.5	17	16	16	17	16
LBC - Shaftesbury Avenue (530057, 181285)					
NO2	80	88	89	76	71
PM10	30	30	30	31	29

[1] Kings College London, www.londonair.org.uk, Accessed: May 2013.

Pollutant	Annual mean concentrations (µg/m^3)				
	2008	2009	2010	2011	2012
LBC - Euston Road (529884, 182639)					
NO2	No data	No data	No data[2]	123	106
WCC - Marylebone Road (528121, 182015)					
NO2	115	107	98	97	94
PM10	40	36	35	41	37
PM2.5	20	17	17	No data	No data[3]
WCC - Marylebone Road Filter Dynamics Measurement System (528121, 182015)					
PM10	35	37	32	38	31
PM2.5	No data[4]	22	23	24	21
WCC - Horseferry Road (529778, 178960)					
NO2	40	44	49	41	39
PM10	No data[5]	15	21	19	18
WCC - Charing Cross Library (529997, 180699)[6]					
NO2	78	84	89	No data	No data
WCC - Covent Garden (530444, 180903)[7]					
NO2	No data	49	52	No data	No data

[2] Site opened 2010.
[3] PM2.5 not monitored in 2011 and 2012.
[4] PM2.5 monitoring began in 2009.
[5] PM10 monitoring began in 2009.
[6] Site closed in 2011. 3% data capture in 2011.
[7] Site open 2009 - 2011. 3% data capture in 2011.

Table 2 : Number of hours when hourly mean NO2 concentrations exceed 200µg/m^3 at continuous monitoring sites[8,9]

Site	Number of exceedances of hourly mean NO2 standard				
	2008	2009	2010	2011	2012
LBC - Bloomsbury (530123, 182014)	0 (138)	2 (122)	1 (125)	0 (134)	1 (133)
LBC - Shaftesbury Avenue (530057, 181285)	8 (190)	10 (191)	21 (207)	15 (198)	12 (191)
LBC - Euston Road (529884, 182639)	No data	No data	No data[2]	703 (309)	293 (260)
WCC - Marylebone Road (528121, 182015)	801 (316)	469 (262)	524 (279)	217 (244)	122 (235)
WCC - Horseferry Road (529778, 178960)	1 (111)	0 (129)	3 (160)	0 (144)	0 (120)
WCC - Charing Cross Library (529997, 180699)	24 (205)	23 (211)	33 (210)	0 (170)	No data[6]
WCC - Covent Garden (530444, 180903)[7]	No data	0 (126)	0 (143)	0 (121)	No data

Table 3 : Number of days when daily mean PM10 concentrations exceed 50µg/m^3 at continuous monitoring sites[10,11]

Site	Number of exceedances of daily mean PM10 standard				
	2008	2009	2010	2011	2012
LBC - Bloomsbury (530123, 182014)	13 (41)	13 (42)	2 (28)	17 (38)	10 (32)
LBC - Shaftesbury Avenue (530057, 181285)	20 (44)	13 (43)	4 (42)	27 (47)	17 (45)
WCC - Marylebone Road (528121, 182015)	67 (56)	36 (51)	45 (52)	73 (58)	44 (53)
WCC - Marylebone Road Filter Dynamics Measurement System (528121, 182015)	42 (52)	44 (57)	25 (47)	57 (57)	23 (46)
WCC - Horseferry Road (529778, 178960)	No data[5]	0 (20)	1 (33)	8 (34)	10 (33)

Diffusion tubes

2.1.6 This section summarises the results from the diffusion tube sites that are considered relevant for the assessment of air quality in this study area.

Table 4 : Annual mean NO2 concentrations recorded at diffusion tube monitoring sites[12]

Site	Ordnance Survey (OS) coordinates	Annual mean NO2 concentrations (µg/m^3)				
		2008	2009	2010	2011[13]	2012[13]
Wakefield Gardens	530430, 182430	38	39	34	46	39

[8] 99.8th percentile of hourly mean NO2 concentrations in brackets (µg/m^3).
[9] Kings College London, www.londonair.org.uk, Accessed: May 2013.
[10] 90.4th percentile of daily mean PM10 concentrations in brackets (µg/m^3).
[11] Kings College London, www.londonair.org.uk, Accessed: May 2013.
[12] London Borough of Camden (2012) Air Quality Updating and Screening Assessment.
[13] 'No data' indicates data not available in local authority reports.

Site	Ordnance Survey (OS) coordinates	Annual mean NO_2 concentrations ($\mu g/m^3$)				
		2008	2009	2010	2011[13]	2012[13]
63 Gower Street	529671, 181970	73	83	74	No data	No data
Tavistock Gardens	529880, 182334	47	50	52	48	40
Tottenham Court Road	529568, 181728	84	108	92	92	83
British Library	529977, 182809	49	54	47	No data	No data
Russell Square Gardens	530120, 182034	44	45	44	No data	No data
Brill Place	529914, 183147	49	52	54	51	50
Bloomsbury Street	529962, 181620	77	81	41	77	72
Goodge Street	529488, 181719	57	61	50	No data	No data
Argyle School	530210, 182762	52	50	50	No data	No data
Robert Street	529133, 182695	48	49	45	No data	No data
Euston Road	530110, 182795	93	87	82	93	82
Kentish Town Road	529013, 185102	62	68	74	57	59
Drummond Street/Cobourg Street	529395, 182567	46	51	48	No data	No data
Mill Lane/ West End Lane	525366, 185253	No data	No data	No data	57	52
Chetwynd Road	528722, 185950	No data	50	68	44	44
Camden Road	529173, 184129	67	73	84	72	67
47 Fitzjohn's Avenue	526547, 185125	56	63	73	58	61
London Westminster Automatic Urban and Rural Network (AURN)	529780, 178958	46	40	46	No data	No data
Covent Garden	530434, 180909	51	48	49	No data	No data
Air Street	529453, 180616	75	81	92	No data	No data

Site	Ordnance Survey (OS) coordinates	Annual mean NO2 concentrations (µg/m3)				
		2008	2009	2010	2011[13]	2012[13]
Oxford Street	528274, 181065	137	139	122	No data	No data

Greater London Authority maps

2.1.7 Greater London Authority (GLA) maps[14] of modelled pollution concentrations provide further context on the spatial pattern of air pollution across London and indications of likely pollutant concentrations across the capital. However, modelling is less robust than monitoring data and may not fully take into account local characteristics that influence pollution levels.

2.1.8 GLA pollution maps estimate that annual NO2 concentrations exceed air quality objectives at or near main roads within the study area. The maps show no significant change in NO2 concentrations from 2008 to 2011.

2.1.9 Annual mean PM10 concentrations have reduced marginally at all locations between 2008 and 2011 according to the GLA modelling estimates, although not along main roads such as Marylebone Road and Euston Road, which in 2011 were still exceeding the air quality standard of 40µg/m3. The number of days on which the PM10 concentrations exceed the standard of 50µg/m3 is estimated to have fallen between 2008 and 2011, although the frequency of exceedances is higher near busy roads.

Background pollutant concentrations

2.1.10 Estimates of background air quality were obtained from the Department for Environment, Food and Rural Affairs (Defra) maps[15]. Background NO2 concentrations are close to or exceeding air quality standards throughout the study area. Background PM10 concentrations are within air quality standards throughout the study area. NO2 annual mean concentrations were in the range of 25.6µg/m3 - 53.8µg/m3 in 2012. PM10 annual mean concentrations were in the range of 20.2µg/m3 - 26.9µg/m3 in 2012.

Local emission sources

2.1.11 The main source of pollution within the study area is road vehicles. Major roads include Euston Road, Hampstead Road, Eversholt Street, Pancras Road and Portland Place. Other emission sources in Camden include a permitted Part A[16, 17] process at Charterhouse Street[18]. Due to the distance of Part A processes from the revised scheme and the nature of their emissions, it is unlikely that these will have an effect on local air quality in the study area. Contributions to local pollutant concentrations from industrial installations are included within background concentrations used in this assessment.

[14] Greater London Authority (GLA) (2010) London Atmospheric Emissions Inventory 2008 Concentration Maps; http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.
[15] Department for Environment, Food and Rural Affairs (Defra) (2012) Defra background maps 2011; http://uk-air.defra.gov.uk/data/laqm-background-maps?year=2011; Accessed: July 2015.
[16] Pollution Prevention and Control Act 1999 *(c.24).* London, Her Majesty's Stationery Office.
[17] The Environmental Permitting (England and Wales) Regulations 2010 (SI 210 No. 675). London, Her Majesty's Stationery Office.
[18] Environment Agency, What's in your Backyard?; http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

2.2 Receptors

Human

Stage A construction (2017-2026)

2.2.1 There are many sensitive receptors in the Euston area, given its urban nature and the proximity of many residential properties, commercial premises and community facilities to construction sites and roads where traffic flows will change. Receptors at greatest risk of dust effects are indicated in Map AQ-02-001-01 (Volume 5, Air Quality Map Book).

Stage B1 construction and operation (2026-2033)

2.2.2 There are many receptors in the Euston area and high densities of residential properties. Several sensitive receptors identified along the route include St Aloysius Infant School, St Mary and St Pancras Church of England Primary School, Christ Church of England Primary School (Regent's Park), North Bridge House Preparatory School and The Cavendish School.

Ecological

2.2.3 There are no ecological receptors with statutory designation within the Euston area.

3 Dust impact evaluation and risk rating

3.1.1 This section provides details of the assessment of dust emissions during construction of the scheme. Since the submission of the main ES, new guidance[19] has been published by the Institute of Air Quality Management (IAQM). This assessment follows the approach described in the new guidance. Maps of the assessed receptors in relation to the scheme and associated construction activities are contained within the Volume 5 Air Quality Map Book within this SES2 and AP3 ES.

3.2 Enabling works pre-2017

Dust emission magnitude

3.2.1 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 5. Information used to determine the dust emissions magnitude for trackout has been taken from Appendix M1 HS2 transport assessment Euston C220, AP03 Euston Incremental Staging Option: Construction Phase Programme Report (C220-ARP-CL-SCH-01A-000011), Construction and Logistics Report - Euston Community Forum, with confirmation from relevant project engineers. Demolition, earthworks and construction will not be undertaken during this stage, as utilities work will be taking place.

Table 5 : Euston Station and Approach, enabling works pre 2017, dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Trackout	Medium	Between 10 and 50 heavy goods vehicles (HGVs) per day

Assessed receptors and sensitivity of the area

3.2.2 The area where construction works will be undertaken is densely populated, with 10 to 100 residential receptors identified within 20m of dust-generating activities. Residential receptors are high sensitivity receptors for both dust soiling and health effects. Background PM10 concentrations are predicted to be between 24 and 28µg/m^3.

3.2.3 The sensitivity of the surrounding area to trackout has been identified as high for dust soiling effects and human health effects due to the close proximity of high sensitivity receptors combined with the ambient PM10 concentrations in the surrounding area (Table 6).

Table 6 : Euston Station and Approach, enabling works pre 2017, sensitivity of the area to dust soiling, human health and ecological impacts

Activity	Dust soiling	Human health
Trackout	High	High

Risk of impacts

3.2.4 Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as medium risk at worst, for dust soiling and human health

[19] IAQM, 2014, Guidance on the assessment of dust from demolition and construction, London.

impacts (Table 7). It should be noted that this is the risk prior to the implementation of mitigation measures which are embedded within the project as part of the draft Code of Construction Practice (CoCP).

3.2.5 It is anticipated that with the implementation of the measures described in the draft CoCP, there will be no significant effects.

Table 7 : Euston Station and Approach, Enabling works pre 2017, summary dust risk table prior to mitigation

Activity	Dust soiling	Human health
Trackout	Medium risk	Medium risk

3.3 Enabling works (Q1 2017 to Q1 2018)

Dust emission magnitude

3.3.1 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 8. Information used to determine the dust emissions magnitude for each of the activities has been taken from Appendix M1 HS2 transport assessment Euston C220, AP03 Euston Incremental Staging Option: Construction Phase Programme Report (C220-ARP-CL-SCH-01A-000011), Construction and Logistics Report - Euston Community Forum, with confirmation from relevant project engineers. Earthworks will not be undertaken during this stage.

Table 8 : Euston Station and Approach, Enabling works (Q1 2017 - Q1 2018), dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Demolition	Large	1. Building volume >50,000m^3 2.Potentially dusty material (concrete)
Construction	Medium	1. Building volume <25,000m^3 2. Potentially dusty construction material (concrete)
Trackout	Medium	Between 10 to 50 HGVs per day

Assessed receptors and sensitivity of the area

3.3.2 The area where construction works will be undertaken is densely populated, with 10 to 100 residential receptors identified within 20m of dust-generating activities. Residential receptors are high sensitivity receptors for both dust soiling and health effects. Background PM10 concentrations are predicted to be between 24 and 28µg/m^3.

3.3.3 The sensitivity of the surrounding area to demolition, earthworks and trackout has been identified as high for dust soiling effects and human health effects due to the close proximity of high sensitivity receptors combined with the ambient PM10 concentrations in the surrounding area (Table 9).

Table 9 : Euston Station and Approach, Enabling works (Q1 2017 - Q1 2018), sensitivity of the area to dust soiling and human health impacts

Activity	Dust soiling	Human health
Demolition	High	High
Construction	High	High
Trackout	High	High

Risk of impacts

3.3.4 Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as high risk at worst for dust soiling and human health impacts (Table 10). It should be noted that this is the risk prior to the implementation of mitigation measures which are embedded within the project as part of the draft CoCP.

3.3.5 It is anticipated that, with the implementation of the measures described in the draft CoCP, there will be no significant effects.

Table 10 : Euston Station and Approach, Enabling works (Q1 2017 - Q1 2018), summary dust risk table prior to mitigation

Activity	Dust soiling	Human health
Demolition	High risk	High risk
Construction	Medium risk	Medium risk
Trackout	Medium risk	Medium risk

3.4 Stage A (Q1 2018 to Q4 2026)

Dust emission magnitude

3.4.1 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 11. Information used to determine the dust emissions magnitude for each of the activities has been taken from Appendix M1 HS2 transport assessment Euston C220, AP03 Euston Incremental Staging Option: Construction Phase Programme Report (C220-ARP-CL-SCH-01A-000011), Construction and Logistics Report - Euston Community Forum, with confirmation from relevant project engineers.

Table 11 : Euston Station and Approach, A1: Q2 2018 - Q4 2026, dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Demolition	Large	1. Building volume >50,000m^3 2. Potentially dusty material (concrete)
Earthworks	Large	1. Total material moved > 100,000 tonnes 2. Total site area >10,000m^2
Construction	Large	1. Building volume between 25,000 and 100,000m^3

Activity	Dust emission magnitude	Reasoning
		2. Potentially dusty construction material (concrete)
Trackout	Large	More than 50 HGVs per day

Assessed receptors and sensitivity of the area

3.4.2 The area where construction works will be undertaken is densely populated, with 10 to 100 residential receptors identified within 20m of dust-generating activities. Residential receptors are high sensitivity receptors for both dust soiling and health effects. Background PM10 concentrations are predicted to be between 24 and 28µg/m^3.

3.4.3 The sensitivity of the surrounding area to all activities has been identified as high for dust soiling effects and human health effects due to the close proximity of high sensitivity receptors combined with the ambient PM10 concentrations in the surrounding area (Table 12).

Table 12 : Euston Station and Approach, A1: Q2 2018 - Q4 2026, sensitivity of the area to dust soiling and human health impacts

Activity	Dust soiling	Human health
Demolition	High	High
Earthworks	High	High
Construction	High	High
Trackout	High	High

Risk of impacts

3.4.4 Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as high risk at worst for dust soiling and human health impacts (Table 13). It should be noted that this is the risk prior to the implementation of mitigation measures which are embedded within the project as part of the draft CoCP.

3.4.5 It is anticipated that with the implementation of the measures described in the draft CoCP, there will be no significant effects.

Table 13 : Euston Station and Approach, A1: Q2 2018 - Q4 2026, summary dust risk table prior to mitigation

Activity	Dust soiling	Human health
Demolition	High risk	High risk
Earthworks	High risk	High risk
Construction	High risk	High risk
Trackout	High risk	High risk

3.5 Stage B1 (Q1 2027 to Q4 2033)

Dust emission magnitude

3.5.1 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 14. Information used to determine the dust emissions magnitude for each of the activities has been taken from Appendix M1 HS2 transport assessment Euston C220, AP03 Euston Incremental Staging Option: Construction Phase Programme Report (C220-ARP-CL-SCH-01A-000011), Construction and Logistics Report - Euston Community Forum, with confirmation from relevant project engineers. Demolition will not be undertaken during this stage.

Table 14 : Euston Station and Approach, B1:Q1 2027 - Q4 2033, dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Earthworks	Large	1. Total material moved greater than 100,000 tonnes 2. Total site area >10,000m^2
Construction	Large	1. Building volume >100,000m^3 2. Potentially dusty construction material (concrete)
Trackout	Large	More than 50 HGVs per day

Assessed receptors and sensitivity of the area

3.5.2 The site where construction works will be undertaken is located in a densely populated area, with 10 to 100 residential receptors identified within 20m of dust-generating activities. Residential receptors are high sensitivity for both dust soiling and health effects. Background PM10 concentrations are predicted to be between 24 and 28µg/m^3.

3.5.3 The sensitivity of the surrounding area to earthworks, construction and trackout has been identified as high for dust soiling effects and human health effects due to the close proximity of high sensitivity receptors combined with the ambient PM10 concentrations in the surrounding area (Table 15).

Table 15 : Euston Station and Approach, B1:Q1 2027 - Q4 2033, sensitivity of the area to dust soiling and human health impacts

Activity	Dust soiling	Human health
Earthworks	High	High
Construction	High	High
Trackout	High	High

Risk of impacts

3.5.4 Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as high risk at worst for dust soiling and human health impacts (Table 16). It should be noted that this is the risk prior to the implementation

of mitigation measures which are embedded within the project as part of the draft CoCP.

3.5.5 It is anticipated that with the implementation of the measures described in the draft CoCP, there will be no significant effects.

Table 16 : Euston Station and Approach, B1:Q1 2027 - Q4 2033, summary dust risk table prior to mitigation

Activity	Dust soiling	Human health
Earthworks	High risk	High risk
Construction	High risk	High risk
Trackout	High risk	High risk

3.6 Q1 2033 to Q4 2035

Dust emission magnitude

3.6.1 Each dust-generating activity has been assigned a dust emission magnitude as shown in Table 17. Information used to determine the dust emissions magnitude for each of the activities has been taken from Appendix M1 HS2 transport assessment Euston C220, AP03 Euston Incremental Staging Option: Construction Phase Programme Report (C220-ARP-CL-SCH-01A-000011), Construction and Logistics Report - Euston Community Forum, with confirmation from relevant project engineers. Demolition, earthworks and construction will not be undertaken during this stage.

Table 17 : Euston Station and Approach, Q1 2033 -2035, dust emission magnitude for construction activities

Activity	Dust emission magnitude	Reasoning
Trackout	Small	Fewer than 10 HGVs per day

Assessed receptors and sensitivity of the area

3.6.2 The area where construction works will be undertaken is densely populated, with 10 to 100 residential receptors identified within 20m of construction activities. Residential receptors are high sensitivity receptors for both dust soiling and health effects. Background PM10 concentrations are predicted to be between 24 and 28µg/m^3.

3.6.3 The sensitivity of the surrounding area to trackout has been identified as high for dust soiling effects and human health effects due to the close proximity of high sensitivity receptors combined with the ambient PM10 concentrations in the surrounding area (Table 18).

Table 18 : Euston Station and Approach, Q1 2033 -2035, sensitivity of the area to dust soiling and human health impacts

Activity	Dust soiling	Human health
Trackout	High	High

Risk of impacts

3.6.4 Taking into consideration the dust emission magnitude and the sensitivity of the area, the site has been classified as low risk at worst for dust soiling and human health impacts (Table 19). It should be noted that this is the risk prior to the implementation of mitigation measures which are embedded within the project as part of the draft CoCP.

3.6.5 It is anticipated that with the implementation of the measures described in the draft CoCP, there will be no significant effects.

Table 19 : Euston Station and Approach, Q1 2033 -2035, summary dust risk table prior to mitigation

Activity	Dust soiling	Human health
Trackout	Low risk	Low risk

4 Air quality assessment - road traffic

4.1 Overall assessment approach

4.1.1 The air quality assessment for road related emissions has used the approach described in the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES.

4.1.2 As detailed in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, the Environmental Protection UK (EPUK) and the IAQM have issued new guidance[20] on assessing the impact of traffic emissions, which introduces a new set of impact descriptors. The 2015 IAQM/EPUK guidance differs from the previous 2010 guidance[21], which was used in the main ES, in that it treats a similar increase in ambient pollution concentrations as having a greater impact, and therefore more likely to have a significant effect. Where applicable, a comparison has been provided in the results tables for the impact descriptors using the previous guidance.

4.2 Model inputs and verification

Model parameters for detailed assessment

4.2.1 The ADMS-Roads model was used for the detailed assessment. A surface roughness length of 1.5m, meteorological site surface roughness length of 0.2m, minimum Monin-Obukhov length of 100m and latitude of 51.5 degrees were used in the detailed assessment. All other model parameters were model default settings. Meteorological data from the London Heathrow monitoring site was used for the year 2012.

Model verification

4.2.2 Since the model predicts NOx contributions for the modelled roads, this was initially compared to the NOx road contribution derived from NOx concentrations (where available) measured at monitoring sites and Defra background maps.

4.2.3 Roadside monitoring sites were chosen from across the traffic model area, which extends both west and north of the study area. This allowed a greater number of sites to be included in the verification. Sites where nearby busy roads were not included in the traffic model data set (and which, therefore, could not be modelled correctly as roadside sites with the traffic data set) were excluded from assessment. The results of this comparison are shown in Table 20.

Table 20 : Comparison of monitored and modelled NOx concentrations for verification

Site	Monitored total NO2 (µg/m^3)	Monitored total NOx (µg/m^3)	Background NO2 (µg/m^3)	Background NOx (µg/m^3)	Monitored road NOx (µg/m^3)	Modelled road NOx (µg/m^3)
LBC - Euston Road (Automatic Urban and Rural Network	106.1	350.0	47.8	84.3	58.3	265.7

[20] Moorcroft and Barrowcliffe et al, (2015), Land-Use Planning and Development Control: Planning for Air Quality, London: Institute of Air Quality Management.
[21] EPUK, (2010), Development Control: Planning for Air Quality.

Site	Monitored total NO2 (µg/m3)	Monitored total NOx (µg/m3)	Background NO2 (µg/m3)	Background NOx (µg/m3)	Monitored road NOx (µg/m3)	Modelled road NOx (µg/m3)
(AURN))						
LBC - Shaftesbury Avenue (AURN)	71.2	163.0	53.7	97.0	17.5	66.0
LBC - Euston Road	82.1	N/A	47.8	83.7	34.3	110.0
LBC - Kentish Town Road	59.0	N/A	33.9	55.5	25.1	67.7
LBC - 47 Fitzjohn's Avenue	61.2	N/A	32.5	52.7	28.7	79.0
LBC - Bloomsbury Street	71.6	N/A	51.0	92.6	20.6	61.2
LBC - Camden Road	67.4	N/A	37.1	62.2	30.3	87.4
LBC - Chetwynd Road	43.7	N/A	31.7	51.3	12.0	28.4
LBC - Mill Lane/ West End Lane	52.0	N/A	32.4	52.6	19.6	49.9
LBC - Swiss Cottage	72.7	N/A	37.4	62.9	35.3	106.1

4.2.4 The calculated model adjustment factor for the road contribution of NOx was 2.19. This factor is the gradient of the straight line function obtained by plotting the modelled NOx concentrations versus the (unadjusted) monitored NOx concentrations. This was applied to all NOx results from the ADMS-Roads modelling. This is line with Defra guidance[22] on model verification.

4.2.5 A final check was then made to compare the total NO2 concentrations from the modelling to the monitored data. This is shown in Table 21.

Table 21 : Comparison of monitored and modelled annual average NO2 concentrations

Site	Monitored concentration (µg/m3)	Modelled concentration (µg/m3)	Difference ((modelled - monitored)/monitored) x 100
LBC - Euston Road (AURN)	106.1	82.8	-21.9%
LBC - Shaftesbury Avenue (AURN)	71.2	70.9	-0.5%
LBC - Euston Road	82.1	95.3	16.1%

[22] Department for Environment, Food and Rural Affairs (2009) Technical Guidance Note LAQM TG(09).

Site	Monitored concentration (µg/m^3)	Modelled concentration (µg/m^3)	Difference ((modelled - monitored)/monitored) x 100
LBC - Kentish Town Road	59.0	61.4	4.2%
LBC - 47 Fitzjohn's Avenue	61.2	38.5	-37.2%
LBC - Bloomsbury Street	71.6	85.8	19.8%
LBC - Camden Road	67.4	71.2	5.6%
LBC - Chetwynd Road	43.7	39.2	-10.2%
LBC - Mill Lane/ West End Lane	52.0	49.4	-5.2%
LBC - Swiss Cottage	72.7	77.5	6.7%

4.2.6 As there was no consistent under- or over-prediction and the majority of modelled NO2 concentrations were within 25% of the monitored concentrations, no further adjustment was undertaken.

4.3 Stage A construction (2017-2026)

4.3.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix SES2 and AP3 TR-001-000.

4.3.2 Three peak construction traffic scenarios, described in Volume 2 Section 3.9, have been assessed during the Stage A period. Although the three scenarios assessed occur in different years, their assessment assumes a pessimistic approach with 2017 vehicle emission rates and 2017 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in each stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. These scenarios have been assessed against the relevant future baseline cases without the AP3 revised scheme.

Receptors assessed

4.3.3 Receptors assessed are listed in Table 22.

Table 22 : Modelled receptors (Stage A construction phase)

Receptor	Description/location	OS coordinates
1-1	122 Euston Road	529894, 182688
1-2	1 Mornington Crescent	529140, 183128
1-3	44 Doric Way	529650, 182763

Receptor	Description/location	OS coordinates
1-4	Cruciform Building, University College London, Grafton Way	529479, 182267
1-5	40 Hampstead Road	529231, 182477
1-7	The Brunswick Centre	530342, 182204
1-8	Hunstanton House, Cosway Street	527353, 181814
1-9	37 Mornington Crescent	529094, 183356
1-10	Winchilsea House, St. Johns Wood Road	526757, 182527
1-12	59-60 Russell Square	530251, 181928
1-13	Stockleigh Hall, Prince Albert Road	527470, 183410
1-15	Beckfoot, Ampthill Square	529408, 183018
1-18	Clifton Court, Northwick Terrace	526585, 182239
1-19	235 Eversholt Street	529297, 183216
1-21	506 Edgware Road	526610, 182203
1-22	1 Albany Street	528853, 182293
1-24	183-193 Euston Road	529512, 182424
1-25	306 Edgware Road	527048, 181728
1-28	University College Hospital, Gower Street	529401, 182363
1-29	251B Gray's Inn Road	530521, 182771
1-30	343 Gray's Inn Road	530351, 182957
1-33	248 Marylebone Road	527468, 181849
1-41	87 Gower Street	529636, 182047
1-42	Park Square East	528777, 182218
1-43	St. Pancras Renaissance, Euston Road	530074, 182818
1-44	University College London, Drayton House, Gordon Street	529589, 182467
1-45	33 Arlington Road	529019, 183458

Receptor	Description/location	OS coordinates
1-46	Clifton Court, Northwick Terrace	526511, 182336
1-47	16 Upper Woburn Place	529780, 182542
1-48	Dora House 60, St. Johns Wood Road	527076, 182779
1-49	173 Euston Road	529667, 182516
1-54	Harley House, 56-63 Marylebone Road	528368, 182112
1-55	Connaught Hall, 36-45 Tavistock Square	529888, 182254
1-57	30 Park Village East	528831, 183318
1-58	1-17 Delancey Street	528930, 183610
1-60	233 Gray's Inn Road	530564, 182706
1-61	The Morton Hotel, Woburn Place	530117, 182126
1-62	8A Wellington Place	526823, 183156
1-66	St. Johns House, St. Johns Wood High Street	527199, 182916
1-67	Mercury Court, Eversholt Street	529715, 182669
1-69	Unison Centre, 130 Euston Road	529845, 182661
1-70	Gloucester Gate Lodge, Outer Circle	528549, 183445
1-71	Rydal Water, Robert Street	529172, 182719
1-79	Walker House, Phoenix Road	529714, 183122
1-82	73-77 Euston Road	530089, 182763
1-83	234 Great Portland Street	528858, 182111
1-84	70 Oakley Square	529303, 183268
1-85	118 Eversholt Street	529487, 182991
1-87	8 Plender Street	529174, 183562
1-96	16 Pratt Street	529093, 183700
1-134	15 Harrington Square	529258, 183193

Receptor	Description/location	OS coordinates
1-138	Reynolds House, Wellington Road	526861, 183163
1-139	14 Wellington Road	526939, 183060
1-140	149 Park Road	527175, 182801
1-141	St. Johns Hall, St. Johns Wood High Street	527178, 182889
1-142	St. Johns House, St. Johns Wood High Street	527208, 182938
1-143	Grove End House, Grove End Road	526734, 182558
1-144	Century Court, Grove End Road	526763, 182577
1-145	St. Johns Wood Court, St. Johns Wood Road	526784, 182549
1-148	12 St. Johns Wood Road	526611, 182416
1-151	464 Edgware Road	526705, 182098
1-152	384 Edgware Road	526886, 181912
1-153	352 Edgware Road	526953, 181840
1-154	332 Edgware Road	526983, 181804
1-157	49 Lisson Street	527235, 181777
1-160	North West House, Marylebone Road	527670, 181867
1-161	1 Albany Street	528827, 182303
1-164	144 Drummond Street	529232, 182494
1-165	70 Hampstead Road	529231, 182520
1-166	190-198 North Gower Street	529312, 182539
1-167	213 North Gower Street	529296, 182529
1-168	203-209 North Gower Street	529304, 182516
1-169	92-94 Drummond Street	529391, 182592
1-170	152-156 North Gower Street	529429, 182375
1-171	215 Euston Road	529470, 182400

Receptor	Description/location	OS coordinates
1-177	165 Euston Road	529744, 182562
1-178	69 Euston Square	529754, 182618
1-182	73-77 Euston Road	530066, 182771
1-184	378 Gray's Inn Road	530368, 182979
1-186	70B Eversholt Street	529591, 182842
1-187	70B Eversholt Street	529584, 182853
1-188	118 Eversholt Street	529494, 182979
1-191	1 Aldenham Street	529447, 183045
1-192	184A Eversholt Street	529379, 183143
1-194	8-10 Arlington Road	529077, 183388
1-195	31 Arlington Road	529029, 183442
1-196	Metro House, Arlington Road	529048, 183441
1-197	15 Arlington Road	529050, 183403
1-198	40 Arlington Road	529031, 183473
1-200	322A Gray's Inn Road	530548, 182772
1-201	279 Gray's Inn Road	530485, 182839
1-202	366 Gray's Inn Road	530468, 182934
1-203	1 Kings Cross Bridge	530429, 182964
1-204	313 Gray's Inn Road	530433, 182930
1-205	370 Gray's Inn Road	530402, 182970
1-206	325 Gray's Inn Road	530399, 182948
1-207	Oakshott Court, Polygon Road	529631, 183067
1-208	43C Polygon Road	529618, 183080
1-212	Monica Shaw Court, Purchese Street	529732, 183137

Receptor	Description/location	OS coordinates
1-213	Monica Shaw Court, Purchese Street	529755, 183101
1-223	103 Judd Street	530158, 182648
1-224	65 Judd Street	530217, 182543
1-225	3 Hunter Street	530308, 182367
1-226	Selwyn House, Lansdowne Terrace	530468, 182170
1-227	70 Guilford Street	530287, 182092
1-228	Downing Court, Grenville Street	530359, 182190
1-229	5 Bloomsbury Place	530371, 181782
1-230	26 Russell Square	529961, 181989
1-231	Institute of Education, University of London	529965, 182149
1-232	34 Tavistock Square	529842, 182317
1-233	Leslie Forster House, 29 Endsleigh Gardens	529717, 182502
1-234	20 Gordon Square	529698, 182258
1-235	105 Gower Street	529608, 182088
1-236	327 Euston Road	529139, 182247
1-237	177 Cleveland Street	528934, 182178
1-238	23 Park Square East	528773, 182235
1-239	1 Cornwall Terrace	527900, 182210
1-240	5 Clarence Terrace	527816, 182261
1-241	Flat 24, Hanover Gate Mansions, Park Road	527509, 182442
1-242	Hanover Gate Lodge, Park Road	527356, 182642
1-243	Outer Circle, Regent's Park	527346, 182946
1-244	Flat 7, Bentinck Close, 76-82 Prince Albert Road	527310, 183221
1-245	25A Delancey Street	528871, 183580

Receptor	Description/location	OS coordinates
1-246	27 Delancey Street	528846, 183573
1-247	14 Park Village West	528653, 183388
1-248	125 Parkway	528653, 183560
1-249	48 Mornington Street	528902, 183395
1-250	69 Mornington Street	528981, 183420
1-251	3 Mornington Place	529003, 183287
1-252	54-65 Mornington Street	528916, 183375
1-253	13 Mornington Crescent	529079, 183200
1-254	Flat 3, Datchet House, Augustus Street	528996, 182874
1-255	1 Varndell Street	529015, 182810
1-256	Flat 20, Scafell, Stanhope Street	529077, 182796
1-257	39 Robert Street	529056, 182695
1-258	Pangbourne, William Road	529056, 182547
1-259	1 St. Andrews Place, Outer Circle, Regent's Park	528746, 182323
1-260	85 Albany Street	528814, 182603
1-261	108 Robert Street	528860, 182711
1-262	195 Albany Street	528756, 182991
1-263	197 Abany Street	528649, 183335
1-264	Flat 36, Farley Court, Baker Street	527938, 181997
1-265	35 Greek Street	529834, 181004
1-266	Carlisle Buildings, Carlisle Street	529616, 181228
1-267	24 Great Chapel Street	529528, 181276
1-268	42 Phoenix Road	529703, 182986
1-269	Oakshott Court, Chalton Street	529684, 182998

Receptor	Description/location	OS coordinates
1-270	104 Whitfield Street	529289, 182091
1-271	85 Judd Street	530187, 182600
1-272	Brunswick Mansions, 8 Handel Street	530298, 182390
1-273	61-63 Guilford Street	530228, 182069
1-274	17 Grenville Street	530383, 182129
1-275	Institute of Education, University of London	529898, 182236
1-276	Institute of Education, University of London	530031, 182049
1-277	29-30 Tavistock Square	529809, 182361
1-278	University College Hospital, 235 Euston Road	529291, 182297
1-279	Chesterfield House, 385 Euston Road	528898, 182163
1-280	212 Great Portland Street	528886, 182023
1-281	6 York Gate	528285, 182173
1-282	19 Hanover Terrace	527494, 182626
1-283	Christ Church Primary School, Redhill Street	528795, 182955
1-284	2 Park Village East	528654, 183507
1-285	36-53 Mornington Street	528938, 183422
1-286	27 Camden High Street	529148, 183458
1-287	112 Whitfield Street	529267, 182124
1-288	The Bartlett School, 22 Gordon Street	529615, 182419
1-289	2 Park Village West	528676, 183314
1-290	217 Albany Street	528624, 183420
1-291	Cruciform Building, University College London, Gower Street	529521, 182210
1-292	14 George Mews	529230, 182557
1-293	29 Marylebone Road	528158, 182020

Receptor	Description/location	OS coordinates
1-294	25 Marylebone Road	528207, 182034
1-295	20-26 Ulster Place	528536, 182147
1-296	33 Bayham Street	529171, 183578
1-297	Ravenscar, Bayham Street	529199, 183579
1-298	86 Plender Street	529188, 183550
1-299	46 Camden High Street	529132, 183521
1-300	53 Camden High Street	529113, 183514
1-301	220 Eversholt Street	529223, 183365
1-302	3 Millbrook Place, Eversholt Street	529194, 183366
1-303	23-28 Brook House, Cranleigh Street	529370, 183160
1-304	205 Eversholt Street	529311, 183205
1-305	Marathon House, 200 Marylebone Road	527677, 181909
1-306	55 Mornington Terrace	528777, 183560
1-307	2 Bayham Street	529281, 183426
1-308	72 Crowndale Road	529288, 183421
1-309	Conisborough, Bayham Street	529159, 183636
1-311	3 Chalton Street	529881, 182721
1-312	117 Euston Road	529978, 182713
1-313	1 Dukes Road	529860, 182632
1-314	16 Upper Woburn Place	529768, 182562
1-315	Witley Court, Coram Street	530056, 182228
1-317	Ormonde Mansions, 100A Southampton Row	530370, 181813
1-318	92 Southampton Row	530392, 181784
1-319	Stewart House, 32 Russell Square	530036, 181896

Receptor	Description/location	OS coordinates
1-320	Rothay, 154 Albany Street	528830, 182809
1-321	Hawkshead, Stanhope Street	529076, 182815
1-322	Newlands, Harrington Street	529147, 182811

Background concentrations

4.3.4 The background concentrations used in the assessment are shown in Table 23 taken from the Defra maps.

Table 23 : Background 2012 and 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-1) 122 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-2) 1 Mornington Crescent	67.9	39.8	25.0	57.1	34.3	23.4
(1-3) 44 Doric Way	84.3	47.8	26.3	70.6	40.7	24.4
(1-4) Cruciform Building, University College London, Grafton Way	84.3	47.8	26.3	70.6	40.7	24.4
(1-5) 40 Hampstead Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-7) The Brunswick Centre	83.7	47.8	26.2	70.7	41.2	24.3
(1-8) Hunstanton House, Cosway Street	91.3	51.0	26.9	76.4	43.3	25.0
(1-9) 37 Mornington Crescent	67.9	39.8	25.0	57.1	34.3	23.4
(1-10) Winchilsea House, St. Johns Wood Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-12) 59-60 Russell Square	97.0	53.7	26.5	80.5	45.4	24.4
(1-13) Stockleigh Hall, Prince Albert Road	55.6	33.9	22.8	47.1	29.4	21.4
(1-15) Beckfoot, Ampthill Square	67.9	39.8	25.0	57.1	34.3	23.4
(1-18) Clifton Court, Northwick Terrace	66.1	38.9	24.5	55.7	33.7	22.9
(1-19) 235 Eversholt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-21) 506 Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9

Receptor (or zone of receptors)	Concentrations (μg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-22) 1 Albany Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-24) 183-193 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-25) 306 Edgware Road	91.3	51.0	26.9	76.4	43.3	25.0
(1-28) University College Hospital, Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-29) 251B Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-30) 343 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-33) 248 Marylebone Road	91.3	51.0	26.9	76.4	43.3	25.0
(1-41) 87 Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-42) Park Square East	72.8	42.1	25.2	61.1	36.3	23.5
(1-43) St. Pancras Renaissance, Euston Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-44) University College London, Drayton House, Gordon Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-45) 33 Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-46) Clifton Court, Northwick Terrace	66.1	38.9	24.5	55.7	33.7	22.9
(1-47) 16 Upper Woburn Place	84.3	47.8	26.3	70.6	40.7	24.4
(1-48) Dora House 60, St. Johns Wood Road	68.1	39.9	24.8	57.3	34.5	23.2
(1-49) 173 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-54) Harley House, 56-63 Marylebone Road	72.8	42.1	25.2	61.1	36.3	23.5
(1-55) Connaught Hall, 36-45 Tavistock Square	84.3	47.8	26.3	70.6	40.7	24.4
(1-57) 30 Park Village East	59.9	36.1	23.7	50.6	31.2	22.1
(1-58) 1-17 Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-60) 233 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-61) The Morton Hotel, Woburn Place	83.7	47.8	26.2	70.7	41.2	24.3
(1-62) 8A Wellington Place	60.8	36.4	23.6	51.4	31.6	22.1
(1-66) St. Johns House, St. Johns Wood High Street	68.1	39.9	24.8	57.3	34.5	23.2
(1-67) Mercury Court, Eversholt Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-69) Unison Centre, 130 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-70) Gloucester Gate Lodge, Outer Circle	59.9	36.1	23.7	50.6	31.2	22.1
(1-71) Rydal Water, Robert Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-79) Walker House, Phoenix Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-82) 73-77 Euston Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-83) 234 Great Portland Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-84) 70 Oakley Square	67.9	39.8	25.0	57.1	34.3	23.4
(1-85) 118 Eversholt Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-87) 8 Plender Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-96) 16 Pratt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-134) 15 Harrington Square	67.9	39.8	25.0	57.1	34.3	23.4
(1-138) Reynolds House, Wellington Road	60.8	36.4	23.6	51.4	31.6	22.1
(1-139) 14 Wellington Road	60.8	36.4	23.6	51.4	31.6	22.1
(1-140) 149 Park Road	68.1	39.9	24.8	57.3	34.5	23.2
(1-141) St. Johns Hall, St. Johns Wood High Street	68.1	39.9	24.8	57.3	34.5	23.2
(1-142) St. Johns House, St. Johns Wood High Street	68.1	39.9	24.8	57.3	34.5	23.2

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-143) Grove End House, Grove End Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-144) Century Court, Grove End Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-145) St. Johns Wood Court, St. Johns Wood Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-148) 12 St. Johns Wood Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-151) 464 Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9
(1-152) 384 Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(1-153) 352 Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(1-154) 332 Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(1-157) 49 Lisson Street	91.3	51.0	26.9	76.4	43.3	25.0
(1-160) North West House, Marylebone Road	91.3	51.0	26.9	76.4	43.3	25.0
(1-161) 1 Albany Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-164) 144 Drummond Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-165) 70 Hampstead Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-166) 190-198 North Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-167) 213 North Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-168) 203-209 North Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-169) 92-94 Drummond Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-170) 152-156 North Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-171) 215 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-177) 165 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-178) 69 Euston Square	84.3	47.8	26.3	70.6	40.7	24.4
(1-182) 73-77 Euston Road	83.7	47.8	26.2	70.7	41.2	24.3

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-184) 378 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-186) 70B Eversholt Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-187) 70B Eversholt Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-188) 118 Eversholt Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-191) 1 Aldenham Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-192) 184A Eversholt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-194) 8-10 Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-195) 31 Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-196) Metro House, Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-197) 15 Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-198) 40 Arlington Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-200) 322A Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-201) 279 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-202) 366 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-203) 1 Kings Cross Bridge	83.7	47.8	26.2	70.7	41.2	24.3
(1-204) 313 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-205) 370 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-206) 325 Gray's Inn Road	83.7	47.8	26.2	70.7	41.2	24.3
(1-207) Oakshott Court, Polygon Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-208) 43C Polygon Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-212) Monica Shaw Court,, Purchese Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-213) Monica Shaw Court, Purchese Street	67.9	39.8	25.0	57.1	34.3	23.4

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-223) 103 Judd Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-224) 65 Judd Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-225) 3 Hunter Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-226) Selwyn House, Lansdowne Terrace	83.7	47.8	26.2	70.7	41.2	24.3
(1-227) 70 Guilford Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-228) Downing Court, Grenville Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-229) 5 Bloomsbury Place	97.0	53.7	26.5	80.5	45.4	24.4
(1-230) 26 Russell Square	92.6	51.0	26.6	77.5	43.5	24.4
(1-231) Institute of Education, University of London	84.3	47.8	26.3	70.6	40.7	24.4
(1-232) 34 Tavistock Square	84.3	47.8	26.3	70.6	40.7	24.4
(1-233) Leslie Forster House, 29 Endsleigh Gardens	84.3	47.8	26.3	70.6	40.7	24.4
(1-234) 20 Gordon Square	84.3	47.8	26.3	70.6	40.7	24.4
(1-235) 105 Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-236) 327 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-237) 177 Cleveland Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-238) 23 Park Square East	72.8	42.1	25.2	61.1	36.3	23.5
(1-239) 1 Cornwall Terrace	68.1	39.9	24.8	57.3	34.5	23.2
(1-240) 5 Clarence Terrace	68.1	39.9	24.8	57.3	34.5	23.2
(1-241) Flat 24, Hanover Gate Mansions, Park Road	68.1	39.9	24.8	57.3	34.5	23.2
(1-242) Hanover Gate Lodge, Park Road	68.1	39.9	24.8	57.3	34.5	23.2
(1-243) Outer Circle, Regent's Park	68.1	39.9	24.8	57.3	34.5	23.2

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-244) Flat 7, Bentinck Close, 76-82 Prince Albert Road	55.6	33.9	22.8	47.1	29.4	21.4
(1-245) 25A Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-246) 27 Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-247) 14 Park Village West	59.9	36.1	23.7	50.6	31.2	22.1
(1-248) 125 Parkway	59.9	36.1	23.7	50.6	31.2	22.1
(1-249) 48 Mornington Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-250) 69 Mornington Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-251) 3 Mornington Place	67.9	39.8	25.0	57.1	34.3	23.4
(1-252) 54-65 Mornington Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-253) 13 Mornington Crescent	67.9	39.8	25.0	57.1	34.3	23.4
(1-254) Flat 3, Datchet House, Augustus Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-255) 1 Varndell Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-256) Flat 20, Scafell, Stanhope Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-257) 39 Robert Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-258) Pangbourne, William Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-259) 1 St. Andrews Place, Outer Circle, Regent's Park	72.8	42.1	25.2	61.1	36.3	23.5
(1-260) 85 Albany Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-261) 108 Robert Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-262) 195 Albany Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-263) 197 Abany Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-264) Flat 36, Farley Court, Baker Street	91.3	51.0	26.9	76.4	43.3	25.0

Receptor (or zone of receptors)	Concentrations (μg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-265) 35 Greek Street	92.6	51.0	26.6	77.5	43.5	24.4
(1-266) Carlisle Buildings, Carlisle Street	92.6	51.0	26.6	77.5	43.5	24.4
(1-267) 24 Great Chapel Street	92.6	51.0	26.6	77.5	43.5	24.4
(1-268) 42 Phoenix Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-269) Oakshott Court, Chalton Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-270) 104 Whitfield Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-271) 85 Judd Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-272) Brunswick Mansions, 8 Handel Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-273) 61-63 Guilford Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-274) 17 Grenville Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-275) Institute of Education, University of London	84.3	47.8	26.3	70.6	40.7	24.4
(1-276) Institute of Education, University of London	83.7	47.8	26.2	70.7	41.2	24.3
(1-277) 29-30 Tavistock Square	84.3	47.8	26.3	70.6	40.7	24.4
(1-278) University College Hospital, 235 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-279) Chesterfield House, 385 Euston Road	72.8	42.1	25.2	61.1	36.3	23.5
(1-280) 212 Great Portland Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-281) 6 York Gate	72.8	42.1	25.2	61.1	36.3	23.5
(1-282) 19 Hanover Terrace	68.1	39.9	24.8	57.3	34.5	23.2
(1-283) Christ Church Primary School, Redhill Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-284) 2 Park Village East	59.9	36.1	23.7	50.6	31.2	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-285) 36-53 Mornington Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-286) 27 Camden High Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-287) 112 Whitfield Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-288) The Bartlett School, 22 Gordon Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-289) 2 Park Village West	59.9	36.1	23.7	50.6	31.2	22.1
(1-290) 217 Albany Street	59.9	36.1	23.7	50.6	31.2	22.1
(1-291) Cruciform Building, University College London, Gower Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-292) 14 George Mews	84.3	47.8	26.3	70.6	40.7	24.4
(1-293) 29 Marylebone Road	72.8	42.1	25.2	61.1	36.3	23.5
(1-294) 25 Marylebone Road	72.8	42.1	25.2	61.1	36.3	23.5
(1-295) 20-26 Ulster Place	72.8	42.1	25.2	61.1	36.3	23.5
(1-296) 33 Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-297) Ravenscar, Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-298) 86 Plender Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-299) 46 Camden High Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-300) 53 Camden High Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-301) 220 Eversholt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-302) 3 Millbrook Place, Eversholt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-303) 23-28 Brook House, Cranleigh Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-304) 205 Eversholt Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-305) Marathon House, 200 Marylebone Road	91.3	51.0	26.9	76.4	43.3	25.0

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-306) 55 Mornington Terrace	59.9	36.1	23.7	50.6	31.2	22.1
(1-307) 2 Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-308) 72 Crowndale Road	67.9	39.8	25.0	57.1	34.3	23.4
(1-309) Conisborough, Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(1-311) 3 Chalton Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-312) 117 Euston Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-313) 1 Dukes Road	84.3	47.8	26.3	70.6	40.7	24.4
(1-314) 16 Upper Woburn Place	84.3	47.8	26.3	70.6	40.7	24.4
(1-315) Witley Court, Coram Street	83.7	47.8	26.2	70.7	41.2	24.3
(1-317) Ormonde Mansions 100A Southampton Row	97.0	53.7	26.5	80.5	45.4	24.4
(1-318) 92 Southampton Row	97.0	53.7	26.5	80.5	45.4	24.4
(1-319) Stewart House, 32 Russell Square	97.0	53.7	26.5	80.5	45.4	24.4
(1-320) Rothay, 154 Albany Street	72.8	42.1	25.2	61.1	36.3	23.5
(1-321) Hawkshead, Stanhope Street	84.3	47.8	26.3	70.6	40.7	24.4
(1-322) Newlands, Harrington Street	84.3	47.8	26.3	70.6	40.7	24.4

Detailed modelling results

4.3.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor derived using the previous EPUK guidance has also been provided. Results presented correspond to the greatest impact at each receptor from the three scenarios assessed.

4.3.6 As set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES, Environmental Protection UK (EPUK) and the IAQM have issued new guidance[23] on assessing air quality impacts. The main difference from the previous guidance is that it describes a similar increase in pollutant concentrations as

[23] Moorcroft and Barrowcliffe et al., (2015), Land-Use Planning and Development Control: Planning for Air Quality. London: Institute of Air Quality Management.

having greater adverse impact, and therefore having a greater potential for significant effects. For example, where the baseline NO2 concentration is under the standard at 38µg/m^3 and increases by 1.5µg/m^3 to 39.5µg/m^3 with the scheme, the previous guidance defined this as a slight adverse impact, while the new guidance defines this as a moderate adverse impact. The increased emphasis on severity in the descriptors in the new guidance is particularly accentuated for receptors where baseline concentrations are at or above the objective value, as is the case in parts of London. This is illustrated in the results in Table 24. The 6th column shows the impact descriptor using the 2015 guidance, and the 7th (last) column shows the impact descriptor using the 2010 guidance. It can be seen that more of the descriptors using the 2015 guidance are moderate or substantial than with the 2010 guidance, for the same change in annual mean NO2 concentration.

Table 24 : Summary of annual mean NO_2 results (Stage A construction phase)

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-1	104.8	90.1	93.0	3.0	Substantial adverse	Moderate adverse
1-2	55.6	47.4	48.1	0.8	Substantial adverse	Slight adverse
1-3	68.0	57.9	59.9	2.0	Substantial adverse	Moderate adverse
1-4	76.1	62.1	64.1	2.0	Substantial adverse	Moderate adverse
1-5	87.5	69.5	70.9	1.4	Substantial adverse	Slight adverse
1-7	61.1	52.5	52.7	0.2	Moderate adverse	Negligible
1-8	95.8	81.5	82.0	0.5	Moderate adverse	Slight adverse
1-9	52.0	45.8	46.1	0.3	Moderate adverse	Negligible
1-10	64.7	54.4	54.5	0.1	Negligible	Negligible
1-12	86.8	75.8	75.7	-0.1	Negligible	Negligible
1-13	50.1	42.1	42.0	-0.1	Negligible	Negligible
1-15	50.9	43.6	43.9	0.3	Moderate adverse	Negligible
1-18	63.8	53.9	54.1	0.3	Moderate adverse	Negligible
1-19	57.6	49.5	50.0	0.5	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-21	68.2	57.6	57.7	0.1	Negligible	Negligible
1-22	73.1	61.9	63.9	2.0	Substantial adverse	Slight adverse
1-24	99.9	83.3	84.4	1.1	Substantial adverse	Slight adverse
1-25	100.3	86.8	87.0	0.3	Moderate adverse	Negligible
1-28	95.2	78.8	80.5	1.7	Substantial adverse	Slight adverse
1-29	73.8	64.8	65.4	0.6	Substantial adverse	Slight adverse
1-30	94.0	82.0	82.6	0.6	Moderate adverse	Slight adverse
1-33	97.2	82.9	83.6	0.6	Substantial adverse	Slight adverse
1-41	74.1	57.7	58.7	1.0	Substantial adverse	Slight adverse
1-42	89.6	75.7	76.8	1.1	Substantial adverse	Slight adverse
1-43	98.3	84.0	85.3	1.3	Substantial adverse	Slight adverse
1-44	110.5	94.3	93.8	-0.5	Moderate beneficial	Slight beneficial
1-45	52.0	44.5	45.0	0.5	Moderate adverse	Slight adverse
1-46	69.0	57.6	57.9	0.3	Moderate adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-47	93.6	82.3	83.4	1.1	Substantial adverse	Slight adverse
1-48	60.7	53.0	53.2	0.2	Moderate adverse	Negligible
1-49	108.6	95.2	96.6	1.4	Substantial adverse	Slight adverse
1-54	87.4	73.2	74.2	0.9	Substantial adverse	Slight adverse
1-55	69.9	61.5	61.3	-0.2	Moderate beneficial	Negligible
1-57	50.6	40.9	40.9	0.0	Negligible	Negligible
1-58	56.1	46.9	48.4	1.5	Substantial adverse	Slight adverse
1-60	67.4	58.6	59.2	0.6	Moderate adverse	Slight adverse
1-61	88.5	77.1	77.4	0.3	Moderate adverse	Negligible
1-62	61.5	51.5	52.0	0.5	Moderate adverse	Slight adverse
1-66	66.0	56.6	57.0	0.4	Moderate adverse	Slight adverse
1-67	79.5	67.4	69.5	2.1	Substantial adverse	Moderate adverse
1-69	95.8	82.3	84.3	2.0	Substantial adverse	Slight adverse
1-70	49.4	42.7	44.2	1.5	Substantial adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-71	63.1	53.5	54.8	1.3	Substantial adverse	Slight adverse
1-79	50.4	43.4	44.4	1.1	Substantial adverse	Slight adverse
1-82	84.3	72.8	74.2	1.3	Substantial adverse	Slight adverse
1-83	80.5	68.4	68.7	0.4	Moderate adverse	Negligible
1-84	55.8	47.2	48.1	0.9	Substantial adverse	Slight adverse
1-85	62.6	55.7	56.8	1.0	Substantial adverse	Slight adverse
1-87	58.6	50.4	51.0	0.6	Substantial adverse	Slight adverse
1-96	67.5	55.8	56.1	0.3	Moderate adverse	Negligible
1-134	61.5	52.2	53.5	1.2	Substantial adverse	Slight adverse
1-138	58.1	48.5	49.0	0.5	Moderate adverse	Slight adverse
1-139	58.3	48.6	49.2	0.6	Moderate adverse	Slight adverse
1-140	68.0	57.1	57.4	0.3	Moderate adverse	Negligible
1-141	65.1	55.7	56.1	0.4	Moderate adverse	Slight adverse
1-142	59.8	51.0	51.2	0.2	Moderate adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-143	62.7	52.1	52.2	0.1	Negligible	Negligible
1-144	64.6	54.7	54.8	0.1	Negligible	Negligible
1-145	65.6	56.4	56.4	0.1	Negligible	Negligible
1-148	58.2	48.5	48.7	0.2	Moderate adverse	Negligible
1-151	74.7	62.9	62.9	0.0	Negligible	Negligible
1-152	78.9	67.1	67.1	0.0	Negligible	Negligible
1-153	83.4	71.4	71.5	0.1	Negligible	Negligible
1-154	87.5	75.0	75.2	0.3	Moderate adverse	Negligible
1-157	80.3	68.3	68.5	0.2	Moderate adverse	Negligible
1-160	100.5	83.1	85.7	2.6	Substantial adverse	Moderate adverse
1-161	69.0	58.5	60.0	1.6	Substantial adverse	Slight adverse
1-164	85.3	68.3	70.1	1.9	Substantial adverse	Slight adverse
1-165	83.1	66.6	68.6	2.0	Substantial adverse	Moderate adverse
1-166	65.4	54.4	54.2	-0.2	Moderate beneficial	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-167	65.8	55.0	55.4	0.4	Moderate adverse	Negligible
1-168	66.7	55.7	56.2	0.4	Moderate adverse	Slight adverse
1-169	64.0	52.6	51.6	-1.0	Substantial beneficial	Slight beneficial
1-170	99.3	80.0	82.1	2.1	Substantial adverse	Moderate adverse
1-171	94.6	79.1	80.1	1.0	Substantial adverse	Slight adverse
1-177	108.9	97.1	99.3	2.2	Substantial adverse	Moderate adverse
1-178	91.7	81.0	83.0	2.0	Substantial adverse	Moderate adverse
1-182	107.5	92.2	93.6	1.4	Substantial adverse	Slight adverse
1-184	112.0	98.3	99.0	0.8	Substantial adverse	Slight adverse
1-186	66.7	56.8	58.3	1.5	Substantial adverse	Slight adverse
1-187	66.7	56.9	57.8	0.9	Substantial adverse	Slight adverse
1-188	62.7	55.7	57.1	1.4	Substantial adverse	Slight adverse
1-191	56.7	50.1	51.0	0.8	Substantial adverse	Slight adverse
1-192	57.7	51.2	52.0	0.8	Substantial adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-194	51.4	45.1	45.7	0.6	Moderate adverse	Slight adverse
1-195	52.0	45.1	45.7	0.6	Substantial adverse	Slight adverse
1-196	51.7	45.1	46.4	1.2	Substantial adverse	Slight adverse
1-197	50.6	43.8	44.2	0.4	Moderate adverse	Negligible
1-198	51.9	44.1	44.3	0.2	Moderate adverse	Negligible
1-200	83.2	73.6	74.4	0.8	Substantial adverse	Slight adverse
1-201	74.2	65.0	65.6	0.6	Substantial adverse	Slight adverse
1-202	80.3	70.3	70.9	0.6	Substantial adverse	Slight adverse
1-203	104.3	90.3	90.9	0.7	Substantial adverse	Slight adverse
1-204	86.4	75.6	76.3	0.7	Substantial adverse	Slight adverse
1-205	105.2	92.3	93.1	0.8	Substantial adverse	Slight adverse
1-206	92.1	80.7	81.3	0.7	Substantial adverse	Slight adverse
1-207	50.4	43.2	43.7	0.5	Moderate adverse	Slight adverse
1-208	50.2	43.1	43.5	0.4	Moderate adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-212	50.5	43.4	44.6	1.2	Substantial adverse	Slight adverse
1-213	50.8	43.7	44.9	1.2	Substantial adverse	Slight adverse
1-223	63.8	54.6	55.6	1.0	Substantial adverse	Slight adverse
1-224	62.2	53.2	54.3	1.1	Substantial adverse	Slight adverse
1-225	61.6	52.3	53.3	1.0	Substantial adverse	Slight adverse
1-226	62.0	53.9	54.1	0.2	Negligible	Negligible
1-227	63.5	54.5	54.5	0.0	Negligible	Negligible
1-228	61.6	53.0	53.3	0.3	Moderate adverse	Negligible
1-229	94.1	83.0	82.9	-0.1	Negligible	Negligible
1-230	64.4	55.9	55.8	-0.1	Negligible	Negligible
1-231	63.9	56.6	56.5	-0.2	Negligible	Negligible
1-232	64.6	56.1	55.9	-0.2	Negligible	Negligible
1-233	82.4	72.2	72.4	0.1	Negligible	Negligible
1-234	63.1	54.5	54.6	0.1	Negligible	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-235	72.7	55.9	57.1	1.2	Substantial adverse	Slight adverse
1-236	90.7	76.6	77.8	1.2	Substantial adverse	Slight adverse
1-237	98.9	83.5	84.9	1.3	Substantial adverse	Slight adverse
1-238	77.0	65.4	66.4	1.0	Substantial adverse	Slight adverse
1-239	61.0	51.1	52.0	0.9	Substantial adverse	Slight adverse
1-240	62.9	51.8	52.6	0.8	Substantial adverse	Slight adverse
1-241	60.5	49.4	49.7	0.3	Moderate adverse	Negligible
1-242	69.7	57.4	58.7	1.3	Substantial adverse	Slight adverse
1-243	51.0	43.4	43.7	0.3	Moderate adverse	Negligible
1-244	48.6	41.2	41.0	-0.2	Negligible	Negligible
1-245	55.7	46.7	48.2	1.5	Substantial adverse	Slight adverse
1-246	55.8	46.7	48.7	2.0	Substantial adverse	Slight adverse
1-247	53.2	45.2	45.9	0.7	Substantial adverse	Slight adverse
1-248	61.5	51.2	51.9	0.7	Substantial adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-249	52.8	43.4	43.1	-0.3	Moderate beneficial	Negligible
1-250	48.8	42.1	42.7	0.6	Moderate adverse	Slight adverse
1-251	50.5	43.4	43.1	-0.3	Moderate beneficial	Negligible
1-252	51.4	43.4	43.4	-0.1	Negligible	Negligible
1-253	50.9	43.8	43.9	0.1	Negligible	Negligible
1-254	51.5	43.5	43.8	0.3	Moderate adverse	Negligible
1-255	59.3	49.8	51.2	1.4	Substantial adverse	Slight adverse
1-256	63.1	50.6	52.4	1.8	Substantial adverse	Slight adverse
1-257	58.6	50.1	51.4	1.3	Substantial adverse	Slight adverse
1-258	59.2	50.6	51.5	1.0	Substantial adverse	Slight adverse
1-259	61.3	52.7	53.7	1.1	Substantial adverse	Slight adverse
1-260	58.3	49.8	50.5	0.8	Substantial adverse	Slight adverse
1-261	54.5	46.4	47.4	1.0	Substantial adverse	Slight adverse
1-262	55.3	47.3	47.9	0.5	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-263	49.6	42.3	42.7	0.5	Moderate adverse	Slight adverse
1-264	95.9	80.4	80.8	0.4	Moderate adverse	Slight adverse
1-265	63.1	53.3	53.4	0.0	Negligible	Negligible
1-266	59.7	50.9	50.9	0.0	Negligible	Negligible
1-267	62.7	53.3	53.3	0.1	Negligible	Negligible
1-268	58.7	53.8	54.8	1.0	Substantial adverse	Slight adverse
1-269	57.4	51.3	52.2	0.9	Substantial adverse	Slight adverse
1-270	63.2	53.2	53.5	0.3	Moderate adverse	Negligible
1-271	62.6	53.5	54.6	1.1	Substantial adverse	Slight adverse
1-272	62.3	52.8	53.9	1.0	Substantial adverse	Slight adverse
1-273	67.5	58.1	58.0	-0.1	Negligible	Negligible
1-274	62.1	53.6	53.6	0.0	Negligible	Negligible
1-275	72.4	64.2	64.0	-0.2	Negligible	Negligible
1-276	66.1	58.6	58.4	-0.2	Moderate beneficial	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-277	65.1	56.5	56.4	-0.1	Negligible	Negligible
1-278	97.9	76.3	77.3	1.1	Substantial adverse	Slight adverse
1-279	86.1	72.8	73.7	0.9	Substantial adverse	Slight adverse
1-280	72.2	61.9	62.1	0.2	Negligible	Negligible
1-281	61.1	52.0	52.7	0.7	Substantial adverse	Slight adverse
1-282	51.3	43.6	44.0	0.4	Moderate adverse	Negligible
1-283	54.1	46.3	46.8	0.5	Moderate adverse	Slight adverse
1-284	53.4	45.5	46.1	0.6	Moderate adverse	Slight adverse
1-285	48.3	40.9	41.1	0.2	Moderate adverse	Negligible
1-286	61.2	52.1	53.0	0.9	Substantial adverse	Slight adverse
1-287	63.6	53.4	53.8	0.4	Moderate adverse	Negligible
1-288	77.3	67.2	66.9	-0.3	Moderate beneficial	Negligible
1-289	52.1	44.3	44.9	0.6	Substantial adverse	Slight adverse
1-290	50.9	43.4	43.9	0.6	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-291	72.5	57.8	59.6	1.9	Substantial adverse	Slight adverse
1-292	83.2	66.6	68.7	2.1	Substantial adverse	Moderate adverse
1-293	92.0	77.3	78.1	0.8	Substantial adverse	Slight adverse
1-294	90.4	76.2	77.1	0.8	Substantial adverse	Slight adverse
1-295	83.3	70.1	70.8	0.8	Substantial adverse	Slight adverse
1-296	59.4	50.5	50.8	0.3	Moderate adverse	Negligible
1-297	59.5	51.0	51.4	0.4	Moderate adverse	Slight adverse
1-298	61.4	53.5	54.4	0.9	Substantial adverse	Slight adverse
1-299	68.6	58.8	60.2	1.4	Substantial adverse	Slight adverse
1-300	64.3	54.1	54.8	0.7	Substantial adverse	Slight adverse
1-301	65.2	54.2	55.4	1.2	Substantial adverse	Slight adverse
1-302	62.9	52.6	53.4	0.8	Substantial adverse	Slight adverse
1-303	58.6	52.2	53.0	0.8	Substantial adverse	Slight adverse
1-304	61.7	54.5	55.6	1.1	Substantial adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-305	96.7	81.4	83.1	1.7	Substantial adverse	Slight adverse
1-306	57.1	46.9	47.1	0.2	Moderate adverse	Negligible
1-307	69.7	60.2	61.0	0.9	Substantial adverse	Slight adverse
1-308	67.7	58.3	59.0	0.8	Substantial adverse	Slight adverse
1-309	60.7	51.2	51.7	0.5	Moderate adverse	Slight adverse
1-311	74.5	65.7	66.9	1.2	Substantial adverse	Slight adverse
1-312	109.7	92.9	95.1	2.2	Substantial adverse	Moderate adverse
1-313	103.0	88.9	91.1	2.3	Substantial adverse	Moderate adverse
1-314	102.1	91.0	93.1	2.1	Substantial adverse	Moderate adverse
1-315	79.2	69.1	69.4	0.3	Moderate adverse	Negligible
1-317	93.6	81.8	81.7	-0.1	Negligible	Negligible
1-318	102.8	91.6	91.4	-0.2	Negligible	Negligible
1-319	67.1	58.7	58.6	-0.1	Negligible	Negligible
1-320	55.5	47.4	48.0	0.6	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-321	62.5	49.7	51.0	1.3	Substantial adverse	Slight adverse
1-322	63.6	50.0	51.5	1.5	Substantial adverse	Slight adverse

Table 25 : Summary of annual mean PM10 results (Stage A construction phase)

Receptor	PM10 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-1	35.8	32.3	33.0	0.6	Slight adverse	Negligible
1-2	26.9	24.8	24.9	0.1	Negligible	Negligible
1-3	29.3	26.7	27.2	0.5	Negligible	Negligible
1-4	30.3	27.2	27.5	0.3	Negligible	Negligible
1-5	32.9	28.6	28.8	0.3	Negligible	Negligible
1-7	27.9	25.7	25.8	0.1	Negligible	Negligible
1-8	35.2	31.7	31.7	0.0	Negligible	Negligible
1-9	26.2	24.6	24.7	0.1	Negligible	Negligible
1-10	27.8	25.5	25.5	0.0	Negligible	Negligible
1-12	30.2	28.1	28.0	0.0	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-13	24.8	22.9	22.9	0.0	Negligible	Negligible
1-15	26.1	24.3	24.3	0.1	Negligible	Negligible
1-18	27.4	25.3	25.3	0.0	Negligible	Negligible
1-19	26.9	25.0	25.2	0.1	Negligible	Negligible
1-21	28.0	25.8	25.8	0.0	Negligible	Negligible
1-22	30.0	27.2	27.6	0.4	Negligible	Negligible
1-24	35.7	31.8	32.0	0.2	Negligible	Negligible
1-25	36.1	32.9	32.9	0.0	Negligible	Negligible
1-28	34.6	30.7	31.1	0.4	Negligible	Negligible
1-29	29.3	27.1	27.2	0.1	Negligible	Negligible
1-30	32.6	29.9	30.0	0.1	Negligible	Negligible
1-33	35.0	31.4	31.5	0.1	Negligible	Negligible
1-41	29.5	26.5	26.6	0.1	Negligible	Negligible
1-42	32.5	29.1	29.4	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-43	33.8	30.6	30.8	0.2	Negligible	Negligible
1-44	38.4	34.1	33.9	-0.2	Negligible	Negligible
1-45	26.3	24.4	24.5	0.1	Negligible	Negligible
1-46	27.8	25.6	25.7	0.1	Negligible	Negligible
1-47	33.6	30.4	30.8	0.4	Negligible	Negligible
1-48	27.2	25.3	25.4	0.1	Negligible	Negligible
1-49	38.0	33.9	34.3	0.4	Negligible	Negligible
1-54	31.8	28.5	28.7	0.1	Negligible	Negligible
1-55	29.4	27.3	27.2	0.0	Negligible	Negligible
1-57	25.1	23.0	23.0	0.0	Negligible	Negligible
1-58	25.7	23.7	24.0	0.2	Negligible	Negligible
1-60	28.2	26.1	26.2	0.1	Negligible	Negligible
1-61	31.0	28.6	28.7	0.1	Negligible	Negligible
1-62	26.1	24.2	24.3	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-66	28.0	25.9	26.0	0.1	Negligible	Negligible
1-67	31.0	28.0	28.6	0.6	Negligible	Negligible
1-69	33.9	30.7	31.1	0.4	Negligible	Negligible
1-70	25.2	23.4	23.7	0.3	Negligible	Negligible
1-71	28.4	26.0	26.1	0.2	Negligible	Negligible
1-79	26.0	24.2	24.4	0.2	Negligible	Negligible
1-82	31.5	28.7	29.0	0.3	Negligible	Negligible
1-83	30.8	27.9	28.0	0.1	Negligible	Negligible
1-84	26.5	24.6	24.8	0.2	Negligible	Negligible
1-85	28.3	26.4	26.7	0.3	Negligible	Negligible
1-87	27.0	25.1	25.2	0.1	Negligible	Negligible
1-96	27.9	25.6	25.6	0.0	Negligible	Negligible
1-134	27.5	25.5	25.8	0.2	Negligible	Negligible
1-138	25.7	23.9	24.0	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-139	25.8	24.0	24.1	0.1	Negligible	Negligible
1-140	28.4	26.1	26.1	0.1	Negligible	Negligible
1-141	27.8	25.8	25.9	0.1	Negligible	Negligible
1-142	27.2	25.2	25.2	0.0	Negligible	Negligible
1-143	27.4	25.1	25.2	0.0	Negligible	Negligible
1-144	27.7	25.5	25.5	0.0	Negligible	Negligible
1-145	27.9	25.7	25.8	0.0	Negligible	Negligible
1-148	26.5	24.5	24.5	0.0	Negligible	Negligible
1-151	28.8	26.5	26.5	0.0	Negligible	Negligible
1-152	30.4	28.0	28.0	0.0	Negligible	Negligible
1-153	31.3	28.7	28.8	0.0	Negligible	Negligible
1-154	31.9	29.2	29.3	0.0	Negligible	Negligible
1-157	33.0	30.1	30.2	0.0	Negligible	Negligible
1-160	35.5	31.6	31.7	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-161	29.1	26.5	26.8	0.3	Negligible	Negligible
1-164	32.5	28.3	28.7	0.4	Negligible	Negligible
1-165	32.0	28.0	28.4	0.4	Negligible	Negligible
1-166	28.7	26.0	26.0	0.0	Negligible	Negligible
1-167	28.8	26.1	26.2	0.1	Negligible	Negligible
1-168	28.9	26.3	26.4	0.1	Negligible	Negligible
1-169	28.3	25.7	25.6	-0.2	Negligible	Negligible
1-170	34.9	30.7	31.2	0.5	Negligible	Negligible
1-171	34.2	30.8	31.0	0.2	Negligible	Negligible
1-177	37.9	34.1	34.6	0.5	Negligible	Negligible
1-178	33.4	30.4	31.1	0.7	Slight adverse	Negligible
1-182	36.0	32.3	32.6	0.3	Negligible	Negligible
1-184	35.4	32.4	32.6	0.2	Negligible	Negligible
1-186	29.0	26.6	26.9	0.4	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-187	29.0	26.5	26.7	0.2	Negligible	Negligible
1-188	28.3	26.4	26.8	0.3	Negligible	Negligible
1-191	27.1	25.5	25.7	0.2	Negligible	Negligible
1-192	27.2	25.6	25.8	0.2	Negligible	Negligible
1-194	26.2	24.5	24.6	0.1	Negligible	Negligible
1-195	26.3	24.5	24.6	0.1	Negligible	Negligible
1-196	26.2	24.5	24.6	0.1	Negligible	Negligible
1-197	26.0	24.3	24.4	0.1	Negligible	Negligible
1-198	26.3	24.3	24.4	0.1	Negligible	Negligible
1-200	30.8	28.5	28.7	0.2	Negligible	Negligible
1-201	29.3	27.1	27.3	0.1	Negligible	Negligible
1-202	30.2	27.9	28.0	0.1	Negligible	Negligible
1-203	33.6	30.7	30.9	0.1	Negligible	Negligible
1-204	31.1	28.6	28.8	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-205	33.9	31.1	31.3	0.2	Negligible	Negligible
1-206	31.8	29.3	29.4	0.1	Negligible	Negligible
1-207	26.0	24.2	24.3	0.1	Negligible	Negligible
1-208	26.0	24.2	24.2	0.1	Negligible	Negligible
1-212	26.0	24.2	24.4	0.2	Negligible	Negligible
1-213	26.1	24.2	24.5	0.2	Negligible	Negligible
1-223	28.2	25.9	26.1	0.2	Negligible	Negligible
1-224	28.0	25.7	25.9	0.2	Negligible	Negligible
1-225	27.9	25.6	25.8	0.2	Negligible	Negligible
1-226	28.1	26.0	26.0	0.0	Negligible	Negligible
1-227	28.1	25.9	25.9	0.0	Negligible	Negligible
1-228	28.0	25.8	25.9	0.1	Negligible	Negligible
1-229	31.5	29.3	29.2	0.0	Negligible	Negligible
1-230	28.1	25.9	25.8	0.0	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-231	28.2	26.3	26.3	0.0	Negligible	Negligible
1-232	28.4	26.2	26.2	0.0	Negligible	Negligible
1-233	32.0	29.2	29.2	0.0	Negligible	Negligible
1-234	28.3	26.1	26.1	0.0	Negligible	Negligible
1-235	29.2	26.2	26.4	0.2	Negligible	Negligible
1-236	34.7	30.9	31.2	0.3	Negligible	Negligible
1-237	35.0	31.2	31.4	0.3	Negligible	Negligible
1-238	30.1	27.4	27.6	0.2	Negligible	Negligible
1-239	27.2	25.0	25.2	0.1	Negligible	Negligible
1-240	27.3	25.0	25.1	0.1	Negligible	Negligible
1-241	27.4	25.1	25.2	0.0	Negligible	Negligible
1-242	29.4	26.8	27.0	0.2	Negligible	Negligible
1-243	25.9	24.1	24.2	0.1	Negligible	Negligible
1-244	24.5	22.8	22.7	0.0	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-245	25.6	23.7	23.9	0.2	Negligible	Negligible
1-246	25.7	23.8	24.1	0.3	Negligible	Negligible
1-247	25.8	23.8	23.9	0.1	Negligible	Negligible
1-248	27.1	24.6	24.8	0.2	Negligible	Negligible
1-249	25.2	23.3	23.3	0.0	Negligible	Negligible
1-250	25.0	23.2	23.4	0.1	Negligible	Negligible
1-251	26.0	24.2	24.2	0.0	Negligible	Negligible
1-252	25.2	23.3	23.4	0.0	Negligible	Negligible
1-253	26.1	24.2	24.2	0.0	Negligible	Negligible
1-254	26.1	24.2	24.2	0.0	Negligible	Negligible
1-255	27.8	25.4	25.6	0.2	Negligible	Negligible
1-256	28.1	25.5	25.7	0.2	Negligible	Negligible
1-257	27.7	25.4	25.6	0.2	Negligible	Negligible
1-258	27.7	25.5	25.6	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-259	27.7	25.5	25.7	0.2	Negligible	Negligible
1-260	27.4	25.2	25.3	0.1	Negligible	Negligible
1-261	26.7	24.6	24.8	0.2	Negligible	Negligible
1-262	26.8	24.8	24.9	0.1	Negligible	Negligible
1-263	25.2	23.3	23.4	0.1	Negligible	Negligible
1-264	34.4	30.4	30.5	0.1	Negligible	Negligible
1-265	27.8	25.4	25.4	0.0	Negligible	Negligible
1-266	27.4	25.1	25.1	0.0	Negligible	Negligible
1-267	27.7	25.3	25.3	0.0	Negligible	Negligible
1-268	27.6	25.9	26.1	0.2	Negligible	Negligible
1-269	27.4	25.5	25.7	0.2	Negligible	Negligible
1-270	28.2	25.7	25.7	0.0	Negligible	Negligible
1-271	28.0	25.8	26.0	0.2	Negligible	Negligible
1-272	28.0	25.7	25.9	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-273	28.4	26.3	26.3	0.0	Negligible	Negligible
1-274	28.0	25.9	25.9	0.0	Negligible	Negligible
1-275	30.0	27.8	27.8	0.0	Negligible	Negligible
1-276	28.4	26.5	26.5	0.0	Negligible	Negligible
1-277	28.5	26.3	26.3	0.0	Negligible	Negligible
1-278	34.0	29.6	29.8	0.2	Negligible	Negligible
1-279	32.1	28.9	29.0	0.1	Negligible	Negligible
1-280	29.5	27.0	27.0	0.0	Negligible	Negligible
1-281	27.6	25.4	25.5	0.1	Negligible	Negligible
1-282	26.0	24.2	24.2	0.1	Negligible	Negligible
1-283	26.6	24.6	24.7	0.1	Negligible	Negligible
1-284	25.7	23.8	23.9	0.1	Negligible	Negligible
1-285	24.8	23.0	23.1	0.0	Negligible	Negligible
1-286	27.5	25.5	25.7	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-287	28.3	25.8	25.8	0.1	Negligible	Negligible
1-288	31.0	28.4	28.3	-0.1	Negligible	Negligible
1-289	25.6	23.7	23.8	0.1	Negligible	Negligible
1-290	25.4	23.5	23.6	0.1	Negligible	Negligible
1-291	29.5	26.5	26.8	0.3	Negligible	Negligible
1-292	32.1	28.0	28.4	0.4	Negligible	Negligible
1-293	33.8	30.2	30.3	0.1	Negligible	Negligible
1-294	33.4	29.9	30.0	0.1	Negligible	Negligible
1-295	31.2	28.1	28.2	0.1	Negligible	Negligible
1-296	27.0	25.1	25.1	0.1	Negligible	Negligible
1-297	27.0	25.1	25.2	0.1	Negligible	Negligible
1-298	27.3	25.5	25.7	0.2	Negligible	Negligible
1-299	28.6	26.5	26.8	0.3	Negligible	Negligible
1-300	27.7	25.5	25.6	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-301	27.3	25.2	25.5	0.2	Negligible	Negligible
1-302	27.3	25.2	25.4	0.2	Negligible	Negligible
1-303	27.2	25.6	25.8	0.2	Negligible	Negligible
1-304	28.0	26.2	26.4	0.2	Negligible	Negligible
1-305	34.9	31.1	31.2	0.1	Negligible	Negligible
1-306	25.8	23.7	23.8	0.1	Negligible	Negligible
1-307	28.2	26.3	26.5	0.2	Negligible	Negligible
1-308	27.9	26.0	26.2	0.2	Negligible	Negligible
1-309	27.1	25.1	25.2	0.1	Negligible	Negligible
1-311	30.0	27.7	27.9	0.3	Negligible	Negligible
1-312	36.9	32.8	33.3	0.5	Negligible	Negligible
1-313	35.6	32.2	32.7	0.5	Negligible	Negligible
1-314	35.2	32.1	32.7	0.7	Slight adverse	Negligible
1-315	29.9	27.5	27.6	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	2017 without scheme	2017 with scheme			
1-317	31.2	29.0	28.9	0.0	Negligible	Negligible
1-318	33.0	30.7	30.6	-0.1	Negligible	Negligible
1-319	28.3	26.2	26.1	0.0	Negligible	Negligible
1-320	26.8	24.8	24.9	0.1	Negligible	Negligible
1-321	28.0	25.3	25.5	0.1	Negligible	Negligible
1-322	28.0	25.4	25.6	0.2	Negligible	Negligible

Table 26 : Summary of 24-hour mean PM10 results (Stage A construction phase)

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-1	54	37	40	3	Moderate adverse	Moderate adverse
1-2	17	12	12	0	Negligible	Negligible
1-3	25	17	18	1	Slight adverse	Negligible
1-4	29	18	19	1	Negligible	Negligible
1-5	39	23	23	1	Negligible	Negligible
1-7	20	14	14	0	Negligible	Negligible
1-8	50	34	34	0	Negligible	Negligible
1-9	16	11	12	0	Negligible	Negligible
1-10	20	14	14	0	Negligible	Negligible
1-12	28	21	21	0	Negligible	Negligible
1-13	12	8	8	0	Negligible	Negligible
1-15	15	11	11	0	Negligible	Negligible
1-18	19	13	13	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-19	17	13	13	0	Negligible	Negligible
1-21	21	14	14	0	Negligible	Negligible
1-22	28	18	19	1	Negligible	Negligible
1-24	53	35	36	1	Slight adverse	Negligible
1-25	56	39	39	0	Negligible	Negligible
1-28	48	30	32	1	Slight adverse	Negligible
1-29	25	18	18	0	Negligible	Negligible
1-30	38	27	28	0	Negligible	Negligible
1-33	50	33	33	0	Negligible	Negligible
1-41	26	16	17	0	Negligible	Negligible
1-42	37	24	25	1	Negligible	Negligible
1-43	44	30	31	1	Slight adverse	Negligible
1-44	69	45	44	-1	Moderate beneficial	Negligible
1-45	16	11	11	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-46	20	14	14	0	Negligible	Negligible
1-47	43	29	31	1	Slight adverse	Negligible
1-48	18	13	13	0	Negligible	Negligible
1-49	66	44	46	2	Moderate adverse	Moderate adverse
1-54	35	22	23	0	Negligible	Negligible
1-55	25	18	18	0	Negligible	Negligible
1-57	13	8	8	0	Negligible	Negligible
1-58	14	10	10	1	Negligible	Negligible
1-60	21	15	15	0	Negligible	Negligible
1-61	31	23	23	0	Negligible	Negligible
1-62	15	11	11	0	Negligible	Negligible
1-66	21	15	15	0	Negligible	Negligible
1-67	31	21	23	2	Slight adverse	Negligible
1-69	44	30	32	2	Slight adverse	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-70	13	9	10	1	Negligible	Negligible
1-71	22	15	15	0	Negligible	Negligible
1-79	15	11	11	0	Negligible	Negligible
1-82	33	23	24	1	Negligible	Negligible
1-83	30	20	21	0	Negligible	Negligible
1-84	16	12	12	0	Negligible	Negligible
1-85	22	16	17	1	Negligible	Negligible
1-87	18	13	13	0	Negligible	Negligible
1-96	20	14	14	0	Negligible	Negligible
1-134	19	14	14	1	Negligible	Negligible
1-138	14	10	10	0	Negligible	Negligible
1-139	14	10	10	0	Negligible	Negligible
1-140	22	15	15	0	Negligible	Negligible
1-141	20	14	15	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-142	18	13	13	0	Negligible	Negligible
1-143	19	13	13	0	Negligible	Negligible
1-144	20	14	14	0	Negligible	Negligible
1-145	20	14	14	0	Negligible	Negligible
1-148	16	11	11	0	Negligible	Negligible
1-151	23	16	16	0	Negligible	Negligible
1-152	29	21	21	0	Negligible	Negligible
1-153	33	23	23	0	Negligible	Negligible
1-154	35	25	25	0	Negligible	Negligible
1-157	40	28	28	0	Negligible	Negligible
1-160	52	34	34	0	Negligible	Negligible
1-161	24	16	17	1	Negligible	Negligible
1-164	38	22	23	1	Negligible	Negligible
1-165	36	21	22	1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-166	23	15	15	0	Negligible	Negligible
1-167	23	15	15	0	Negligible	Negligible
1-168	24	16	16	0	Negligible	Negligible
1-169	22	14	14	0	Negligible	Negligible
1-170	49	30	32	2	Slight adverse	Slight adverse
1-171	46	30	31	1	Slight adverse	Negligible
1-177	66	45	48	3	Moderate adverse	Moderate adverse
1-178	42	29	32	3	Moderate adverse	Slight adverse
1-182	55	37	38	1	Slight adverse	Slight adverse
1-184	52	37	38	1	Slight adverse	Negligible
1-186	24	16	17	1	Negligible	Negligible
1-187	24	16	17	0	Negligible	Negligible
1-188	22	16	17	1	Negligible	Negligible
1-191	18	14	14	1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-192	18	14	14	1	Negligible	Negligible
1-194	15	11	12	0	Negligible	Negligible
1-195	16	11	12	0	Negligible	Negligible
1-196	15	11	12	0	Negligible	Negligible
1-197	15	11	11	0	Negligible	Negligible
1-198	16	11	11	0	Negligible	Negligible
1-200	30	22	23	1	Negligible	Negligible
1-201	25	18	18	0	Negligible	Negligible
1-202	28	20	21	0	Negligible	Negligible
1-203	43	30	31	1	Negligible	Negligible
1-204	32	23	23	0	Negligible	Negligible
1-205	44	32	33	1	Slight adverse	Negligible
1-206	35	25	25	0	Negligible	Negligible
1-207	15	10	11	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-208	15	10	11	0	Negligible	Negligible
1-212	15	11	11	0	Negligible	Negligible
1-213	15	11	11	0	Negligible	Negligible
1-223	21	15	15	1	Negligible	Negligible
1-224	21	14	15	0	Negligible	Negligible
1-225	20	14	14	0	Negligible	Negligible
1-226	21	15	15	0	Negligible	Negligible
1-227	21	15	15	0	Negligible	Negligible
1-228	21	14	15	0	Negligible	Negligible
1-229	34	25	25	0	Negligible	Negligible
1-230	21	15	15	0	Negligible	Negligible
1-231	21	16	16	0	Negligible	Negligible
1-232	22	15	15	0	Negligible	Negligible
1-233	36	25	24	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-234	22	15	15	0	Negligible	Negligible
1-235	25	15	16	0	Negligible	Negligible
1-236	48	31	32	1	Slight adverse	Slight adverse
1-237	50	32	33	1	Slight adverse	Slight adverse
1-238	28	19	19	1	Negligible	Negligible
1-239	18	12	13	0	Negligible	Negligible
1-240	19	12	13	0	Negligible	Negligible
1-241	19	13	13	0	Negligible	Negligible
1-242	25	17	18	1	Negligible	Negligible
1-243	15	10	10	0	Negligible	Negligible
1-244	11	8	8	0	Negligible	Negligible
1-245	14	9	10	1	Negligible	Negligible
1-246	14	10	10	1	Negligible	Negligible
1-247	14	10	10	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-248	18	11	12	0	Negligible	Negligible
1-249	13	9	9	0	Negligible	Negligible
1-250	12	9	9	0	Negligible	Negligible
1-251	15	11	10	0	Negligible	Negligible
1-252	13	9	9	0	Negligible	Negligible
1-253	15	11	11	0	Negligible	Negligible
1-254	15	10	11	0	Negligible	Negligible
1-255	20	13	14	0	Negligible	Negligible
1-256	21	14	14	1	Negligible	Negligible
1-257	20	13	14	1	Negligible	Negligible
1-258	20	14	14	0	Negligible	Negligible
1-259	20	14	14	1	Negligible	Negligible
1-260	19	13	13	0	Negligible	Negligible
1-261	17	12	12	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-262	17	12	12	0	Negligible	Negligible
1-263	13	9	9	0	Negligible	Negligible
1-264	46	29	29	0	Negligible	Negligible
1-265	20	13	13	0	Negligible	Negligible
1-266	19	13	13	0	Negligible	Negligible
1-267	20	13	13	0	Negligible	Negligible
1-268	19	15	15	1	Negligible	Negligible
1-269	19	14	14	0	Negligible	Negligible
1-270	21	14	14	0	Negligible	Negligible
1-271	21	14	15	1	Negligible	Negligible
1-272	21	14	15	1	Negligible	Negligible
1-273	22	16	16	0	Negligible	Negligible
1-274	21	15	15	0	Negligible	Negligible
1-275	28	20	20	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-276	22	16	16	0	Negligible	Negligible
1-277	22	16	16	0	Negligible	Negligible
1-278	45	26	27	1	Negligible	Negligible
1-279	36	24	24	0	Negligible	Negligible
1-280	26	18	18	0	Negligible	Negligible
1-281	19	13	14	0	Negligible	Negligible
1-282	15	11	11	0	Negligible	Negligible
1-283	17	12	12	0	Negligible	Negligible
1-284	14	10	10	0	Negligible	Negligible
1-285	12	8	8	0	Negligible	Negligible
1-286	19	14	14	0	Negligible	Negligible
1-287	22	14	14	0	Negligible	Negligible
1-288	31	22	22	0	Negligible	Negligible
1-289	14	9	10	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-290	13	9	9	0	Negligible	Negligible
1-291	26	16	17	1	Negligible	Negligible
1-292	36	21	22	1	Negligible	Negligible
1-293	44	28	29	0	Negligible	Negligible
1-294	42	27	28	0	Negligible	Negligible
1-295	32	21	21	0	Negligible	Negligible
1-296	18	13	13	0	Negligible	Negligible
1-297	18	13	13	0	Negligible	Negligible
1-298	19	14	14	1	Negligible	Negligible
1-299	23	16	17	1	Negligible	Negligible
1-300	20	14	14	0	Negligible	Negligible
1-301	19	13	14	1	Negligible	Negligible
1-302	18	13	13	0	Negligible	Negligible
1-303	18	14	15	1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-304	21	15	16	1	Negligible	Negligible
1-305	49	32	32	0	Negligible	Negligible
1-306	14	10	10	0	Negligible	Negligible
1-307	21	16	16	1	Negligible	Negligible
1-308	21	15	15	0	Negligible	Negligible
1-309	18	13	13	0	Negligible	Negligible
1-311	27	20	20	1	Negligible	Negligible
1-312	60	39	41	2	Moderate adverse	Moderate adverse
1-313	53	36	38	2	Moderate adverse	Moderate adverse
1-314	51	36	39	3	Moderate adverse	Moderate adverse
1-315	27	19	20	0	Negligible	Negligible
1-317	32	24	24	0	Negligible	Negligible
1-318	40	30	30	0	Negligible	Negligible
1-319	22	15	15	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-320	17	12	12	0	Negligible	Negligible
1-321	21	13	14	0	Negligible	Negligible
1-322	21	13	14	0	Negligible	Negligible

4.3.7 As detailed in paragraph 4.3.2, three construction scenarios were used in the assessment of the Stage A construction. The following tables provide a comparison of the resulting impact descriptors across these scenarios.

Table 27 : Comparison of annual mean NO2 results across peak construction scenarios (Stage A construction phase)

Receptor	**Annual mean NO2 results**		
	Test 1 impact descriptor	**Test 2 impact descriptor**	**Test 3 impact descriptor**
1-1	Moderate adverse	Substantial adverse	Substantial adverse
1-2	Substantial adverse	Substantial adverse	Moderate adverse
1-3	Moderate adverse	Substantial adverse	Substantial adverse
1-4	Substantial adverse	Substantial adverse	Substantial adverse
1-5	Substantial adverse	Substantial adverse	Substantial adverse
1-7	Negligible	Negligible	Moderate adverse
1-8	Negligible	Negligible	Moderate adverse
1-9	Substantial beneficial	Substantial beneficial	Moderate adverse
1-10	Negligible	Negligible	Negligible
1-12	Negligible	Substantial beneficial	Substantial beneficial
1-13	Moderate beneficial	Moderate beneficial	Negligible
1-15	Negligible	Moderate adverse	Moderate adverse
1-18	Moderate beneficial	Moderate beneficial	Moderate adverse
1-19	Negligible	Moderate adverse	Moderate adverse
1-21	Moderate beneficial	Negligible	Negligible
1-22	Substantial beneficial	Substantial adverse	Substantial adverse
1-24	Substantial adverse	Substantial adverse	Moderate adverse
1-25	Moderate beneficial	Moderate beneficial	Moderate adverse
1-28	Substantial adverse	Substantial adverse	Substantial adverse
1-29	Negligible	Moderate adverse	Substantial adverse
1-30	Negligible	Moderate adverse	Moderate adverse

Receptor	Annual mean NO2 results		
1-33	Moderate adverse	Moderate adverse	Substantial adverse
1-41	Moderate adverse	Substantial adverse	Substantial adverse
1-42	Substantial adverse	Substantial adverse	Substantial adverse
1-43	Negligible	Substantial adverse	Substantial adverse
1-44	Moderate beneficial	Substantial beneficial	Substantial beneficial
1-45	Substantial beneficial	Substantial beneficial	Moderate adverse
1-46	Negligible	Negligible	Moderate adverse
1-47	Substantial adverse	Substantial adverse	Substantial adverse
1-48	Negligible	Negligible	Moderate adverse
1-49	Moderate adverse	Substantial adverse	Substantial adverse
1-54	Substantial adverse	Substantial adverse	Moderate adverse
1-55	Moderate beneficial	Substantial beneficial	Substantial beneficial
1-57	Moderate beneficial	Moderate beneficial	Negligible
1-58	Substantial beneficial	Negligible	Substantial adverse
1-60	Negligible	Moderate adverse	Moderate adverse
1-61	Negligible	Negligible	Moderate adverse
1-62	Moderate adverse	Moderate adverse	Moderate adverse
1-66	Moderate adverse	Moderate adverse	Moderate adverse
1-67	Substantial adverse	Substantial adverse	Substantial adverse
1-69	Moderate adverse	Substantial adverse	Substantial adverse
1-70	Substantial adverse	Moderate adverse	Moderate adverse
1-71	Substantial beneficial	Substantial adverse	Substantial adverse
1-79	Negligible	Moderate adverse	Substantial adverse
1-82	Negligible	Substantial adverse	Substantial adverse

Receptor	Annual mean NO2 results		
1-83	Substantial beneficial	Moderate beneficial	Moderate adverse
1-84	Negligible	Moderate adverse	Substantial adverse
1-85	Negligible	Substantial adverse	Substantial adverse
1-87	Moderate beneficial	Negligible	Substantial adverse
1-96	Moderate beneficial	Negligible	Moderate adverse
1-134	Moderate adverse	Substantial adverse	Negligible
1-138	Moderate adverse	Moderate adverse	Moderate adverse
1-139	Moderate adverse	Moderate adverse	Moderate adverse
1-140	Negligible	Moderate adverse	Moderate adverse
1-141	Moderate adverse	Moderate adverse	Moderate adverse
1-142	Negligible	Moderate adverse	Negligible
1-143	Negligible	Negligible	Negligible
1-144	Negligible	Negligible	Negligible
1-145	Negligible	Negligible	Negligible
1-148	Negligible	Moderate adverse	Negligible
1-151	Moderate beneficial	Negligible	Negligible
1-152	Moderate beneficial	Negligible	Negligible
1-153	Moderate beneficial	Negligible	Negligible
1-154	Moderate beneficial	Negligible	Moderate adverse
1-157	Negligible	Negligible	Moderate adverse
1-160	Moderate adverse	Negligible	Substantial adverse
1-161	Substantial beneficial	Substantial adverse	Substantial adverse
1-164	Substantial adverse	Substantial adverse	Substantial adverse
1-165	Substantial adverse	Substantial adverse	Substantial adverse

Receptor	Annual mean NO2 results		
1-166	Moderate beneficial	Moderate beneficial	Moderate beneficial
1-167	Negligible	Moderate adverse	Moderate adverse
1-168	Negligible	Moderate adverse	Moderate adverse
1-169	Substantial beneficial	Substantial beneficial	Substantial beneficial
1-170	Substantial adverse	Substantial adverse	Substantial adverse
1-171	Substantial adverse	Substantial adverse	Moderate adverse
1-177	Substantial adverse	Substantial adverse	Substantial adverse
1-178	Substantial adverse	Substantial adverse	Substantial adverse
1-182	Negligible	Substantial adverse	Substantial adverse
1-184	Negligible	Moderate adverse	Substantial adverse
1-186	Moderate adverse	Substantial adverse	Substantial adverse
1-187	Moderate adverse	Substantial adverse	Substantial adverse
1-188	Negligible	Substantial adverse	Substantial adverse
1-191	Negligible	Substantial adverse	Substantial adverse
1-192	Negligible	Substantial adverse	Substantial adverse
1-194	Substantial beneficial	Substantial beneficial	Moderate adverse
1-195	Substantial beneficial	Substantial beneficial	Substantial adverse
1-196	Substantial beneficial	Substantial beneficial	Substantial adverse
1-197	Substantial beneficial	Substantial beneficial	Moderate adverse
1-198	Substantial beneficial	Substantial beneficial	Moderate adverse
1-200	Negligible	Substantial adverse	Substantial adverse
1-201	Negligible	Moderate adverse	Substantial adverse
1-202	Negligible	Moderate adverse	Substantial adverse
1-203	Negligible	Moderate adverse	Substantial adverse

Receptor	Annual mean NO2 results		
1-204	Negligible	Moderate adverse	Substantial adverse
1-205	Negligible	Moderate adverse	Substantial adverse
1-206	Negligible	Moderate adverse	Substantial adverse
1-207	Negligible	Negligible	Moderate adverse
1-208	Negligible	Negligible	Moderate adverse
1-212	Negligible	Moderate adverse	Substantial adverse
1-213	Negligible	Moderate adverse	Substantial adverse
1-223	Negligible	Moderate adverse	Substantial adverse
1-224	Negligible	Substantial adverse	Substantial adverse
1-225	Negligible	Moderate adverse	Substantial adverse
1-226	Negligible	Negligible	Negligible
1-227	Negligible	Moderate beneficial	Moderate beneficial
1-228	Negligible	Negligible	Moderate adverse
1-229	Negligible	Substantial beneficial	Substantial beneficial
1-230	Negligible	Moderate beneficial	Moderate beneficial
1-231	Negligible	Substantial beneficial	Substantial beneficial
1-232	Negligible	Substantial beneficial	Substantial beneficial
1-233	Negligible	Substantial beneficial	Substantial beneficial
1-234	Negligible	Substantial beneficial	Substantial beneficial
1-235	Substantial adverse	Substantial adverse	Substantial adverse
1-236	Substantial adverse	Substantial adverse	Substantial adverse
1-237	Substantial adverse	Substantial adverse	Substantial adverse
1-238	Substantial adverse	Moderate adverse	Substantial adverse
1-239	Substantial adverse	Substantial adverse	Moderate adverse

Receptor	Annual mean NO2 results		
1-240	Substantial adverse	Substantial adverse	Moderate adverse
1-241	Moderate adverse	Negligible	Moderate adverse
1-242	Substantial adverse	Substantial adverse	Substantial adverse
1-243	Moderate adverse	Negligible	Moderate adverse
1-244	Moderate beneficial	Moderate beneficial	Negligible
1-245	Moderate beneficial	Substantial adverse	Substantial adverse
1-246	Moderate beneficial	Substantial adverse	Substantial adverse
1-247	Substantial beneficial	Substantial beneficial	Substantial adverse
1-248	Substantial beneficial	Substantial beneficial	Substantial adverse
1-249	Moderate beneficial	Substantial beneficial	Moderate beneficial
1-250	Moderate beneficial	Moderate beneficial	Moderate adverse
1-251	Moderate beneficial	Moderate beneficial	Moderate beneficial
1-252	Moderate beneficial	Substantial beneficial	Negligible
1-253	Negligible	Moderate beneficial	Negligible
1-254	Moderate beneficial	Negligible	Moderate adverse
1-255	Moderate beneficial	Substantial adverse	Moderate adverse
1-256	Substantial beneficial	Substantial adverse	Moderate adverse
1-257	Moderate beneficial	Substantial adverse	Substantial adverse
1-258	Negligible	Moderate adverse	Substantial adverse
1-259	Substantial adverse	Moderate adverse	Moderate adverse
1-260	Substantial beneficial	Negligible	Substantial adverse
1-261	Substantial beneficial	Moderate adverse	Substantial adverse
1-262	Substantial beneficial	Moderate beneficial	Moderate adverse
1-263	Moderate beneficial	Moderate beneficial	Moderate adverse

Receptor	Annual mean NO2 results		
1-264	Moderate adverse	Negligible	Moderate adverse
1-265	Negligible	Negligible	Negligible
1-266	Negligible	Negligible	Negligible
1-267	Negligible	Negligible	Negligible
1-268	Negligible	Moderate adverse	Substantial adverse
1-269	Negligible	Moderate adverse	Substantial adverse
1-270	Negligible	Moderate adverse	Negligible
1-271	Negligible	Moderate adverse	Substantial adverse
1-272	Negligible	Moderate adverse	Substantial adverse
1-273	Negligible	Moderate beneficial	Moderate beneficial
1-274	Negligible	Moderate beneficial	Moderate beneficial
1-275	Negligible	Substantial beneficial	Substantial beneficial
1-276	Moderate beneficial	Substantial beneficial	Substantial beneficial
1-277	Negligible	Substantial beneficial	Substantial beneficial
1-278	Substantial adverse	Substantial adverse	Substantial adverse
1-279	Negligible	Moderate adverse	Substantial adverse
1-280	Moderate beneficial	Negligible	Negligible
1-281	Substantial adverse	Moderate adverse	Moderate adverse
1-282	Moderate adverse	Moderate adverse	Negligible
1-283	Substantial beneficial	Moderate beneficial	Moderate adverse
1-284	Substantial beneficial	Substantial beneficial	Moderate adverse
1-285	Moderate beneficial	Moderate beneficial	Moderate adverse
1-286	Substantial beneficial	Moderate beneficial	Substantial adverse
1-287	Moderate adverse	Moderate adverse	Moderate adverse

Receptor	Annual mean NO2 results		
1-288	Moderate beneficial	Substantial beneficial	Substantial beneficial
1-289	Substantial beneficial	Substantial beneficial	Substantial adverse
1-290	Moderate beneficial	Moderate beneficial	Moderate adverse
1-291	Substantial adverse	Substantial adverse	Substantial adverse
1-292	Substantial adverse	Substantial adverse	Substantial adverse
1-293	Substantial adverse	Moderate adverse	Moderate adverse
1-294	Substantial adverse	Moderate adverse	Moderate adverse
1-295	Substantial adverse	Substantial adverse	Moderate adverse
1-296	Negligible	Moderate adverse	Moderate adverse
1-297	Negligible	Moderate adverse	Moderate adverse
1-298	Moderate beneficial	Negligible	Substantial adverse
1-299	Substantial beneficial	Moderate beneficial	Substantial adverse
1-300	Moderate beneficial	Moderate beneficial	Substantial adverse
1-301	Negligible	Negligible	Substantial adverse
1-302	Negligible	Negligible	Substantial adverse
1-303	Negligible	Substantial adverse	Substantial adverse
1-304	Moderate adverse	Substantial adverse	Moderate adverse
1-305	Moderate adverse	Negligible	Substantial adverse
1-306	Substantial beneficial	Substantial beneficial	Moderate adverse
1-307	Negligible	Negligible	Substantial adverse
1-308	Negligible	Negligible	Substantial adverse
1-309	Moderate adverse	Moderate adverse	Negligible
1-311	Negligible	Substantial adverse	Substantial adverse
1-312	Negligible	Substantial adverse	Substantial adverse

Receptor	Annual mean NO_2 results		
1-313	Moderate adverse	Substantial adverse	Substantial adverse
1-314	Substantial adverse	Substantial adverse	Substantial adverse
1-315	Negligible	Negligible	Moderate adverse
1-317	Negligible	Substantial beneficial	Substantial beneficial
1-318	Negligible	Substantial beneficial	Substantial beneficial
1-319	Negligible	Moderate beneficial	Moderate beneficial
1-320	Substantial beneficial	Moderate beneficial	Moderate adverse
1-321	Moderate beneficial	Substantial adverse	Moderate adverse
1-322	Moderate adverse	Substantial adverse	Negligible

Table 28 : Comparison of annual mean PM10 results across peak construction scenarios (Stage A construction phase)

Receptor	Annual mean PM10 results		
	Test 1 impact descriptor	**Test 2 impact descriptor**	**Test 3 impact descriptor**
1-1	Negligible	Negligible	Slight adverse
1-2	Negligible	Negligible	Negligible
1-3	Negligible	Negligible	Negligible
1-4	Negligible	Negligible	Negligible
1-5	Negligible	Negligible	Negligible
1-7	Negligible	Negligible	Negligible
1-8	Negligible	Negligible	Negligible
1-9	Negligible	Negligible	Negligible
1-10	Negligible	Negligible	Negligible
1-12	Negligible	Negligible	Negligible
1-13	Negligible	Negligible	Negligible
1-15	Negligible	Negligible	Negligible
1-18	Negligible	Negligible	Negligible
1-19	Negligible	Negligible	Negligible
1-21	Negligible	Negligible	Negligible
1-22	Negligible	Negligible	Negligible
1-24	Negligible	Negligible	Negligible
1-25	Negligible	Negligible	Negligible
1-28	Negligible	Negligible	Negligible
1-29	Negligible	Negligible	Negligible
1-30	Negligible	Negligible	Negligible
1-33	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-41	Negligible	Negligible	Negligible
1-42	Negligible	Negligible	Negligible
1-43	Negligible	Negligible	Negligible
1-44	Negligible	Negligible	Slight beneficial
1-45	Negligible	Negligible	Negligible
1-46	Negligible	Negligible	Negligible
1-47	Negligible	Negligible	Negligible
1-48	Negligible	Negligible	Negligible
1-49	Negligible	Negligible	Negligible
1-54	Negligible	Negligible	Negligible
1-55	Negligible	Negligible	Negligible
1-57	Negligible	Negligible	Negligible
1-58	Negligible	Negligible	Negligible
1-60	Negligible	Negligible	Negligible
1-61	Negligible	Negligible	Negligible
1-62	Negligible	Negligible	Negligible
1-66	Negligible	Negligible	Negligible
1-67	Negligible	Negligible	Negligible
1-69	Negligible	Negligible	Negligible
1-70	Negligible	Negligible	Negligible
1-71	Negligible	Negligible	Negligible
1-79	Negligible	Negligible	Negligible
1-82	Negligible	Negligible	Negligible
1-83	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-84	Negligible	Negligible	Negligible
1-85	Negligible	Negligible	Negligible
1-87	Negligible	Negligible	Negligible
1-96	Negligible	Negligible	Negligible
1-134	Negligible	Negligible	Negligible
1-138	Negligible	Negligible	Negligible
1-139	Negligible	Negligible	Negligible
1-140	Negligible	Negligible	Negligible
1-141	Negligible	Negligible	Negligible
1-142	Negligible	Negligible	Negligible
1-143	Negligible	Negligible	Negligible
1-144	Negligible	Negligible	Negligible
1-145	Negligible	Negligible	Negligible
1-148	Negligible	Negligible	Negligible
1-151	Negligible	Negligible	Negligible
1-152	Negligible	Negligible	Negligible
1-153	Negligible	Negligible	Negligible
1-154	Negligible	Negligible	Negligible
1-157	Negligible	Negligible	Negligible
1-160	Negligible	Negligible	Negligible
1-161	Negligible	Negligible	Negligible
1-164	Negligible	Negligible	Negligible
1-165	Negligible	Negligible	Negligible
1-166	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-167	Negligible	Negligible	Negligible
1-168	Negligible	Negligible	Negligible
1-169	Negligible	Negligible	Negligible
1-170	Negligible	Negligible	Negligible
1-171	Negligible	Negligible	Negligible
1-177	Negligible	Negligible	Negligible
1-178	Negligible	Negligible	Slight adverse
1-182	Negligible	Negligible	Negligible
1-184	Negligible	Negligible	Negligible
1-186	Negligible	Negligible	Negligible
1-187	Negligible	Negligible	Negligible
1-188	Negligible	Negligible	Negligible
1-191	Negligible	Negligible	Negligible
1-192	Negligible	Negligible	Negligible
1-194	Negligible	Negligible	Negligible
1-195	Negligible	Negligible	Negligible
1-196	Negligible	Negligible	Negligible
1-197	Negligible	Negligible	Negligible
1-198	Negligible	Negligible	Negligible
1-200	Negligible	Negligible	Negligible
1-201	Negligible	Negligible	Negligible
1-202	Negligible	Negligible	Negligible
1-203	Negligible	Negligible	Negligible
1-204	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-205	Negligible	Negligible	Negligible
1-206	Negligible	Negligible	Negligible
1-207	Negligible	Negligible	Negligible
1-208	Negligible	Negligible	Negligible
1-212	Negligible	Negligible	Negligible
1-213	Negligible	Negligible	Negligible
1-223	Negligible	Negligible	Negligible
1-224	Negligible	Negligible	Negligible
1-225	Negligible	Negligible	Negligible
1-226	Negligible	Negligible	Negligible
1-227	Negligible	Negligible	Negligible
1-228	Negligible	Negligible	Negligible
1-229	Negligible	Negligible	Negligible
1-230	Negligible	Negligible	Negligible
1-231	Negligible	Negligible	Negligible
1-232	Negligible	Negligible	Negligible
1-233	Negligible	Negligible	Negligible
1-234	Negligible	Negligible	Negligible
1-235	Negligible	Negligible	Negligible
1-236	Negligible	Negligible	Negligible
1-237	Negligible	Negligible	Negligible
1-238	Negligible	Negligible	Negligible
1-239	Negligible	Negligible	Negligible
1-240	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-241	Negligible	Negligible	Negligible
1-242	Negligible	Negligible	Negligible
1-243	Negligible	Negligible	Negligible
1-244	Negligible	Negligible	Negligible
1-245	Negligible	Negligible	Negligible
1-246	Negligible	Negligible	Negligible
1-247	Negligible	Negligible	Negligible
1-248	Negligible	Negligible	Negligible
1-249	Negligible	Negligible	Negligible
1-250	Negligible	Negligible	Negligible
1-251	Negligible	Negligible	Negligible
1-252	Negligible	Negligible	Negligible
1-253	Negligible	Negligible	Negligible
1-254	Negligible	Negligible	Negligible
1-255	Negligible	Negligible	Negligible
1-256	Negligible	Negligible	Negligible
1-257	Negligible	Negligible	Negligible
1-258	Negligible	Negligible	Negligible
1-259	Negligible	Negligible	Negligible
1-260	Negligible	Negligible	Negligible
1-261	Negligible	Negligible	Negligible
1-262	Negligible	Negligible	Negligible
1-263	Negligible	Negligible	Negligible
1-264	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-265	Negligible	Negligible	Negligible
1-266	Negligible	Negligible	Negligible
1-267	Negligible	Negligible	Negligible
1-268	Negligible	Negligible	Negligible
1-269	Negligible	Negligible	Negligible
1-270	Negligible	Negligible	Negligible
1-271	Negligible	Negligible	Negligible
1-272	Negligible	Negligible	Negligible
1-273	Negligible	Negligible	Negligible
1-274	Negligible	Negligible	Negligible
1-275	Negligible	Negligible	Negligible
1-276	Negligible	Negligible	Negligible
1-277	Negligible	Negligible	Negligible
1-278	Negligible	Negligible	Negligible
1-279	Negligible	Negligible	Negligible
1-280	Negligible	Negligible	Negligible
1-281	Negligible	Negligible	Negligible
1-282	Negligible	Negligible	Negligible
1-283	Negligible	Negligible	Negligible
1-284	Negligible	Negligible	Negligible
1-285	Negligible	Negligible	Negligible
1-286	Negligible	Negligible	Negligible
1-287	Negligible	Negligible	Negligible
1-288	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-289	Negligible	Negligible	Negligible
1-290	Negligible	Negligible	Negligible
1-291	Negligible	Negligible	Negligible
1-292	Negligible	Negligible	Negligible
1-293	Negligible	Negligible	Negligible
1-294	Negligible	Negligible	Negligible
1-295	Negligible	Negligible	Negligible
1-296	Negligible	Negligible	Negligible
1-297	Negligible	Negligible	Negligible
1-298	Negligible	Negligible	Negligible
1-299	Negligible	Negligible	Negligible
1-300	Negligible	Negligible	Negligible
1-301	Negligible	Negligible	Negligible
1-302	Negligible	Negligible	Negligible
1-303	Negligible	Negligible	Negligible
1-304	Negligible	Negligible	Negligible
1-305	Negligible	Negligible	Negligible
1-306	Negligible	Negligible	Negligible
1-307	Negligible	Negligible	Negligible
1-308	Negligible	Negligible	Negligible
1-309	Negligible	Negligible	Negligible
1-311	Negligible	Negligible	Negligible
1-312	Negligible	Negligible	Negligible
1-313	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
1-314	Negligible	Negligible	Slight adverse
1-315	Negligible	Negligible	Negligible
1-317	Negligible	Negligible	Negligible
1-318	Negligible	Negligible	Negligible
1-319	Negligible	Negligible	Negligible
1-320	Negligible	Negligible	Negligible
1-321	Negligible	Negligible	Negligible
1-322	Negligible	Negligible	Negligible

Assessment of significance

4.3.9 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES. AQMAs cover the study area and pollution levels exceed air quality standards in many locations, particularly along major roads.

4.3.10 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the revised scheme. Many receptor locations will also experience an increase in NO2 and PM10 concentrations with the revised scheme. Some of these impacts will be substantial or moderate adverse and will be a significant effect, mainly through the application of the revised assessment methodology. Significant beneficial effects for NO2 and PM10 are also predicted at a number of assessed receptors. Significant adverse effects are predicted at a few assessed receptors for PM10 and at a larger number of assessed receptors for NO2.

4.3.11 Overall, air quality effects are considered to be significant, both adverse and beneficial.

4.4 Stage B1 construction and operation (2026-2033)

4.4.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix SES2 and AP3 TR-001-000.

4.4.2 One peak traffic scenario has been assessed during the Stage B1 combined construction and operational period. Its assessment assumes 2026 vehicle emission rates and 2026 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in each stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the

duration of the peak traffic flows may be much shorter. These scenarios have been assessed against the relevant future baseline cases without the revised scheme.

Receptors assessed

4.4.3 Receptors assessed are listed in Table 29.

Table 29 : Modelled receptors (Stage B1 construction and operation)

Receptor	Description/location	OS coordinates
1-1	122 Euston Road	529894, 182688
1-3	44 Doric Way	529650, 182763
1-4	Cruciform Building, University College London, Grafton Way	529479, 182267
1-8	Hunstanton House, Cosway Street	527353, 181814
1-12	59-60 Russell Square	530251, 181928
1-15	Beckfoot, Ampthill Square	529408, 183018
1-29	251B Gray's Inn Road	530521, 182771
1-30	343 Gray's Inn Road	530351, 182957
1-33	248 Marylebone Road	527468, 181849
1-42	Park Square East	528777, 182218
1-47	16 Upper Woburn Place	529780, 182542
1-49	173 Euston Road	529667, 182516
1-55	Connaught Hall, 36-45 Tavistock Square	529888, 182254
1-67	Mercury Court, Eversholt Street	529715, 182669
1-71	Rydal Water, Robert Street	529172, 182719
1-79	Walker House, Phoenix Road	529714, 183122
1-82	73-77 Euston Road	530089, 182763
1-85	118 Eversholt Street	529487, 182991
1-89	St. Pancras Renaissance, Euston Road	530075, 182819
1-93	Hawkshead, Stanhope Street	529076, 182815

Receptor	Description/location	OS coordinates
1-104	108 Hampstead Road	529230, 182668
1-105	322A Gray's Inn Road	530551, 182771
1-112	87 Gower Street	529637, 182048
1-113	1 Kings Cross Bridge	530429, 182965
1-117	16 Upper Woburn Place	529768, 182562
1-119	University College Hospital, Gower Street	529402, 182364
1-120	Melia White House, Albany Street	528849, 182299
1-121	Unison Centre, Euston Road	529845, 182662
1-123	40 Hampstead Road	529231, 182478
1-134	15 Harrington Square	529258, 183193
1-140	149 Park Road	527175, 182801
1-157	49 Lisson Street	527235, 181777
1-160	North West House, Marylebone Road	527670, 181867
1-161	1 Albany Street	528827, 182303
1-164	144 Drummond Street	529232, 182494
1-165	70 Hampstead Road	529231, 182520
1-166	190-198 North Gower Street	529312, 182539
1-167	213 North Gower Street	529296, 182529
1-168	203-209 North Gower Street	529304, 182516
1-169	92-94 Drummond Street	529391, 182592
1-170	152-156 North Gower Street	529429, 182375
1-173	Drayton House, Gordon Street	529589, 182468
1-175	16 Upper Woburn Place	529780, 182545
1-178	69 Euston Square	529754, 182618

Receptor	Description/location	OS coordinates
1-182	73-77 Euston Road	530066, 182771
1-184	378 Gray's Inn Road	530368, 182979
1-186	70B Eversholt Street	529591, 182842
1-187	70B Eversholt Street	529584, 182853
1-188	118 Eversholt Street	529494, 182979
1-191	1 Aldenham Street	529447, 183045
1-192	184A Eversholt Street	529379, 183143
1-201	279 Gray's Inn Road	530485, 182839
1-202	366 Gray's Inn Road	530468, 182934
1-204	313 Gray's Inn Road	530433, 182930
1-205	370 Gray's Inn Road	530402, 182970
1-206	325 Gray's Inn Road	530399, 182948
1-207	Oakshott Court, Polygon Road	529631, 183067
1-208	43C Polygon Road	529618, 183080
1-212	Monica Shaw Court, Purchese Street	529732, 183137
1-213	Monica Shaw Court, Purchese Street	529755, 183101
1-214	Somerton House, Duke's Road	529860, 182631
1-215	95 Euston Road	529977, 182713
1-220	Maria Fidelis Convent Lower School, North Gower Street	529734, 182650
1-221	237 North Gower Street	529227, 182703
1-222	119 Hampstead Road	529237, 182645
1-323	46 Tavistock Place	530129, 182406
1-326	115A Euston Street	529361, 182485
1-327	The Bartlett School, 22 Gordon Street	529615, 182419

Receptor	Description/location	OS coordinates
1-328	103 Judd Street	530158, 182648
1-329	65 Judd Street	530217, 182543
1-330	3 Hunter Street	530308, 182367
1-331	5 Bloomsbury Place	530371, 181782
1-332	26 Russell Square	529961, 181989
1-333	Institute of Education, University of London	529965, 182149
1-334	34 Tavistock Square	529842, 182317
1-335	Leslie Forster House, 29 Endsleigh Gardens	529717, 182502
1-336	20 Gordon Square	529698, 182258
1-337	105 Gower Street	529608, 182088
1-338	327 Euston Road	529139, 182247
1-339	177 Cleveland Street	528934, 182178
1-340	23 Park Square East	528773, 182235
1-341	Harley House, 56-63 Marylebone Road	528386, 182116
1-342	14 Park Village West	528653, 183388
1-343	125 Parkway	528653, 183560
1-344	1 Mornington Crescent	529137, 183145
1-345	Flat 20, Scafell, Stanhope Street	529077, 182796
1-346	39 Robert Street	529056, 182695
1-347	108 Robert Street	528860, 182711
1-348	195 Albany Street	528756, 182991
1-349	197 Abany Street	528649, 183335
1-350	Flat 36, Farley Court, Baker Street	527938, 181997
1-351	104 Whitfield Street	529289, 182091

Receptor	Description/location	OS coordinates
1-352	85 Judd Street	530187, 182600
1-353	Brunswick Mansions, 8 Handel Street	530298, 182390
1-354	Institute of Education, University of London	529898, 182236
1-355	Institute of Education, University of London	530031, 182049
1-356	29-30 Tavistock Square	529809, 182361
1-357	University College Hospital, 235 Euston Road	529291, 182297
1-358	Chesterfield House, 385 Euston Road	528898, 182163
1-359	Christ Church Primary School, Redhill Street	528795, 182955
1-360	2 Park Village East	528654, 183507
1-361	112 Whitfield Street	529267, 182124
1-362	2 Park Village West	528676, 183314
1-363	217 Albany Street	528624, 183420
1-364	Cruciform Building, University College London, Gower Street	529521, 182210
1-365	14 George Mews	529230, 182557
1-366	29 Marylebone Road	528158, 182020
1-367	25 Marylebone Road	528207, 182034
1-368	20-26 Ulster Place	528536, 182147
1-369	Marathon House, 200 Marylebone Road	527677, 181909
1-371	Ormonde Mansions 100A Southampton Row	530370, 181813
1-372	92 Southampton Row	530392, 181784
1-373	Gillfoot, Hampstead Road	529200, 183076
1-374	205 Eversholt Street	529311, 183205
1-375	23-28 Brook House, Cranleigh Street	529370, 183160
1-376	81 Marchmont Street	530122, 182422

Receptor	Description/location	OS coordinates
1-377	Stewart House, 32 Russell Square	530036, 181896
1-378	Rothay, 154 Albany Street	528830, 182809
1-379	Newlands, Harrington Street	529147, 182811

Background concentrations

4.4.4 The background concentrations used in the assessment are shown in Table 30 taken from the Defra maps.

Table 30 : Background 2012 and 2026 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-1) 122 Euston Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-3) 44 Doric Way	84.3	47.8	26.3	48.5	30.1	23.1
(1-4) Cruciform Building, University College London, Grafton Way	84.3	47.8	26.3	48.5	30.1	23.1
(1-8) Hunstanton House, Cosway Street	91.3	51.0	26.9	51.7	31.6	23.7
(1-12) 59-60 Russell Square	97.0	53.7	26.5	56.9	34.4	23.1
(1-15) Beckfoot, Ampthill Square	67.9	39.8	25.0	40.9	26.1	22.3
(1-29) 251B Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-30) 343 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-33) 248 Marylebone Road	91.3	51.0	26.9	51.7	31.6	23.7
(1-42) Park Square East	72.8	42.1	25.2	42.8	27.0	22.4
(1-47) 16 Upper Woburn Place	84.3	47.8	26.3	48.5	30.1	23.1
(1-49) 173 Euston Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-55) Connaught Hall, 36-45 Tavistock Square	84.3	47.8	26.3	48.5	30.1	23.1
(1-67) Mercury Court, Eversholt Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-71) Rydal Water, Robert Street	84.3	47.8	26.3	48.5	30.1	23.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-79) Walker House, Phoenix Road	67.9	39.8	25.0	40.9	26.1	22.3
(1-82) 73-77 Euston Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-85) 118 Eversholt Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-89) St. Pancras Renaissance, Euston Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-93) Hawkshead, Stanhope Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-104) 108 Hampstead Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-105) 322A Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-112) 87 Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-113) 1 Kings Cross Bridge	83.7	47.8	26.2	50.4	31.3	23.1
(1-117) 16 Upper Woburn Place	84.3	47.8	26.3	48.5	30.1	23.1
(1-119) University College Hospital, Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-120) Melia White House, Albany Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-121) Unison Centre, Euston Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-123) 40 Hampstead Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-134) 15 Harrington Square	67.9	39.8	25.0	40.9	26.1	22.3
(1-140) 149 Park Road	68.1	39.9	24.8	41.1	26.2	22.1
(1-157) 49 Lisson Street	91.3	51.0	26.9	51.7	31.6	23.7
(1-160) North West House, Marylebone Road	91.3	51.0	26.9	51.7	31.6	23.7
(1-161) 1 Albany Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-164) 144 Drummond Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-165) 70 Hampstead Road	84.3	47.8	26.3	48.5	30.1	23.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-166) 190-198 North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-167) 213 North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-168) 203-209 North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-169) 92-94 Drummond Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-170) 152-156 North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-173) Drayton House, Gordon Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-175) 16 Upper Woburn Place	84.3	47.8	26.3	48.5	30.1	23.1
(1-178) 69 Euston Square	84.3	47.8	26.3	48.5	30.1	23.1
(1-182) 73-77 Euston Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-184) 378 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-186) 70B Eversholt Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-187) 70B Eversholt Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-188) 118 Eversholt Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-191) 1 Aldenham Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-192) 184A Eversholt Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-201) 279 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-202) 366 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-204) 313 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-205) 370 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-206) 325 Gray's Inn Road	83.7	47.8	26.2	50.4	31.3	23.1
(1-207) Oakshott Court, Polygon Road	67.9	39.8	25.0	40.9	26.1	22.3
(1-208) 43C Polygon Road	67.9	39.8	25.0	40.9	26.1	22.3

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-212) Monica Shaw Court, Purchese Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-213) Monica Shaw Court, Purchese Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-214) Somerton House, Duke's Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-215) 95 Euston Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-220) Maria Fidelis Convent Lower School, North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-221) 237 North Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-222) 119 Hampstead Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-323) 46 Tavistock Place	83.7	47.8	26.2	50.4	31.3	23.1
(1-326) 115A Euston Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-327) The Bartlett School, 22 Gordon Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-328) 103 Judd Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-329) 65 Judd Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-330) 3 Hunter Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-331) 5 Bloomsbury Place	97.0	53.7	26.5	56.9	34.4	23.1
(1-332) 26 Russell Square	92.6	51.0	26.6	57.1	34.1	23.2
(1-333) Institute of Education, University of London	84.3	47.8	26.3	48.5	30.1	23.1
(1-334) 34 Tavistock Square	84.3	47.8	26.3	48.5	30.1	23.1
(1-335) Leslie Forster House, 29 Endsleigh Gardens	84.3	47.8	26.3	48.5	30.1	23.1
(1-336) 20 Gordon Square	84.3	47.8	26.3	48.5	30.1	23.1
(1-337) 105 Gower Street	84.3	47.8	26.3	48.5	30.1	23.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-338) 327 Euston Road	84.3	47.8	26.3	48.5	30.1	23.1
(1-339) 177 Cleveland Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-340) 23 Park Square East	72.8	42.1	25.2	42.8	27.0	22.4
(1-341) Harley House, 56-63 Marylebone Road	72.8	42.1	25.2	42.8	27.0	22.4
(1-342) 14 Park Village West	59.9	36.1	23.7	36.8	23.9	21.1
(1-343) 125 Parkway	59.9	36.1	23.7	36.8	23.9	21.1
(1-344) 1 Mornington Crescent	67.9	39.8	25.0	40.9	26.1	22.3
(1-345) Flat 20, Scafell, Stanhope Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-346) 39 Robert Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-347) 108 Robert Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-348) 195 Albany Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-349) 197 Abany Street	59.9	36.1	23.7	36.8	23.9	21.1
(1-350) Flat 36, Farley Court, Baker Street	91.3	51.0	26.9	51.7	31.6	23.7
(1-351) 104 Whitfield Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-352) 85 Judd Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-353) Brunswick Mansions, 8 Handel Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-354) Institute of Education, University of London	84.3	47.8	26.3	48.5	30.1	23.1
(1-355) Institute of Education, University of London	83.7	47.8	26.2	50.4	31.3	23.1
(1-356) 29-30 Tavistock Square	84.3	47.8	26.3	48.5	30.1	23.1
(1-357) University College Hospital, 235 Euston Road	84.3	47.8	26.3	48.5	30.1	23.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-358) Chesterfield House, 385 Euston Road	72.8	42.1	25.2	42.8	27.0	22.4
(1-359) Christ Church Primary School, Redhill Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-360) 2 Park Village East	59.9	36.1	23.7	36.8	23.9	21.1
(1-361) 112 Whitfield Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-362) 2 Park Village West	59.9	36.1	23.7	36.8	23.9	21.1
(1-363) 217 Albany Street	59.9	36.1	23.7	36.8	23.9	21.1
(1-364) Cruciform Building, University College London, Gower Street	84.3	47.8	26.3	48.5	30.1	23.1
(1-365) 14 George Mews	84.3	47.8	26.3	48.5	30.1	23.1
(1-366) 29 Marylebone Road	72.8	42.1	25.2	42.8	27.0	22.4
(1-367) 25 Marylebone Road	72.8	42.1	25.2	42.8	27.0	22.4
(1-368) 20-26 Ulster Place	72.8	42.1	25.2	42.8	27.0	22.4
(1-369) Marathon House, 200 Marylebone Road	91.3	51.0	26.9	51.7	31.6	23.7
(1-371) Ormonde Mansions, 100A Southampton Row	97.0	53.7	26.5	56.9	34.4	23.1
(1-372) 92 Southampton Row	97.0	53.7	26.5	56.9	34.4	23.1
(1-373) Gillfoot, Hampstead Road	67.9	39.8	25.0	40.9	26.1	22.3
(1-374) 205 Eversholt Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-375) 23-28 Brook House, Cranleigh Street	67.9	39.8	25.0	40.9	26.1	22.3
(1-376) 81 Marchmont Street	83.7	47.8	26.2	50.4	31.3	23.1
(1-377) Stewart House, 32 Russell Square	97.0	53.7	26.5	56.9	34.4	23.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(1-378) Rothay, 154 Albany Street	72.8	42.1	25.2	42.8	27.0	22.4
(1-379) Newlands, Harrington Street	84.3	47.8	26.3	48.5	30.1	23.1

Detailed modelling results

4.4.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor using the previous EPUK guidance has also been provided.

Table 31 : Summary of annual mean NO_2 results (Stage B1 construction and operation)

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-1	104.4	54.0	54.9	1.0	Substantial adverse	Slight adverse
1-3	67.4	37.6	38.5	0.9	Moderate adverse	Slight adverse
1-4	75.6	39.6	40.5	0.9	Moderate adverse	Slight adverse
1-8	94.8	50.5	50.6	0.2	Negligible	Negligible
1-12	86.3	46.5	46.0	-0.5	Moderate beneficial	Slight beneficial
1-15	50.0	29.8	30.0	0.2	Negligible	Negligible
1-29	73.4	41.8	42.1	0.3	Moderate adverse	Negligible
1-30	93.5	50.4	50.6	0.2	Moderate adverse	Negligible
1-33	96.4	51.4	51.6	0.2	Moderate adverse	Negligible
1-42	89.0	46.9	47.1	0.2	Moderate adverse	Negligible
1-47	93.2	49.9	50.7	0.8	Substantial adverse	Slight adverse
1-49	108.2	57.6	58.3	0.7	Substantial adverse	Slight adverse
1-55	69.3	39.8	38.9	-0.9	Moderate beneficial	Slight beneficial
1-67	79.0	42.1	43.2	1.0	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-71	62.4	35.4	35.3	0.0	Negligible	Negligible
1-79	49.5	29.7	30.1	0.4	Negligible	Negligible
1-82	83.9	46.0	46.5	0.5	Moderate adverse	Slight adverse
1-85	61.8	36.6	37.2	0.6	Slight adverse	Slight adverse
1-89	97.9	51.5	51.9	0.4	Moderate adverse	Slight adverse
1-93	61.7	33.3	33.6	0.3	Negligible	Negligible
1-104	79.6	40.3	44.0	3.7	Substantial adverse	Moderate adverse
1-105	82.8	46.5	46.9	0.4	Moderate adverse	Negligible
1-112	73.5	37.4	37.8	0.4	Negligible	Negligible
1-113	104.0	54.2	54.5	0.3	Moderate adverse	Negligible
1-117	101.7	54.7	55.9	1.3	Substantial adverse	Slight adverse
1-119	94.8	48.4	49.4	1.0	Substantial adverse	Slight adverse
1-120	72.5	39.4	40.2	0.9	Moderate adverse	Slight adverse
1-121	95.4	49.9	50.7	0.8	Substantial adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-123	87.0	43.1	45.3	2.2	Substantial adverse	Moderate adverse
1-134	60.4	33.6	33.8	0.3	Negligible	Negligible
1-140	66.3	35.9	36.1	0.2	Negligible	Negligible
1-157	79.0	43.0	43.1	0.1	Negligible	Negligible
1-160	99.9	51.6	51.7	0.1	Negligible	Negligible
1-161	68.3	37.6	38.2	0.6	Moderate adverse	Slight adverse
1-164	84.8	42.5	45.6	3.1	Substantial adverse	Moderate adverse
1-165	82.6	41.5	45.1	3.6	Substantial adverse	Moderate adverse
1-166	64.8	35.7	35.9	0.2	Negligible	Negligible
1-167	65.2	36.0	36.4	0.4	Negligible	Negligible
1-168	66.1	36.4	36.6	0.2	Negligible	Negligible
1-169	63.3	34.8	36.4	1.6	Slight adverse	Slight adverse
1-170	98.8	49.0	49.9	1.0	Substantial adverse	Slight adverse
1-173	110.1	57.3	55.4	-1.9	Substantial beneficial	Slight beneficial

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-175	108.5	58.7	59.9	1.2	Substantial adverse	Slight adverse
1-178	91.2	49.4	50.5	1.1	Substantial adverse	Slight adverse
1-182	107.1	56.3	56.8	0.5	Moderate adverse	Slight adverse
1-184	111.6	58.5	58.8	0.3	Moderate adverse	Negligible
1-186	66.0	37.0	38.0	0.9	Moderate adverse	Slight adverse
1-187	66.1	37.1	38.0	0.8	Moderate adverse	Slight adverse
1-188	61.9	36.6	37.2	0.6	Negligible	Slight adverse
1-191	55.8	33.2	33.8	0.6	Negligible	Negligible
1-192	56.7	33.7	34.3	0.6	Negligible	Negligible
1-201	73.7	41.8	42.1	0.3	Moderate adverse	Negligible
1-202	79.9	44.4	44.7	0.3	Moderate adverse	Negligible
1-204	86.0	47.1	47.4	0.3	Moderate adverse	Negligible
1-205	104.8	55.5	55.8	0.3	Moderate adverse	Negligible
1-206	91.6	49.7	50.1	0.3	Moderate adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-207	49.4	29.6	29.9	0.3	Negligible	Negligible
1-208	49.3	29.5	29.8	0.3	Negligible	Negligible
1-212	49.6	29.7	30.2	0.5	Negligible	Negligible
1-213	49.9	29.9	30.4	0.5	Negligible	Negligible
1-214	102.6	53.8	54.6	0.9	Substantial adverse	Slight adverse
1-215	109.3	56.0	56.9	0.9	Substantial adverse	Slight adverse
1-220	73.5	38.2	41.0	2.8	Moderate adverse	Moderate adverse
1-221	82.3	41.2	45.3	4.1	Substantial adverse	Substantial adverse
1-222	73.7	38.3	41.0	2.7	Moderate adverse	Moderate adverse
1-323	67.4	38.9	38.5	-0.4	Slight beneficial	Negligible
1-326	66.5	36.6	36.6	0.0	Negligible	Negligible
1-327	76.8	42.8	40.5	-2.3	Substantial beneficial	Moderate beneficial
1-328	63.3	36.6	37.0	0.4	Negligible	Slight adverse
1-329	61.6	36.0	36.4	0.4	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-330	61.0	35.6	36.0	0.3	Negligible	Negligible
1-331	93.6	50.4	49.8	-0.6	Substantial beneficial	Slight beneficial
1-332	63.7	38.6	38.4	-0.2	Slight beneficial	Negligible
1-333	63.3	37.1	36.6	-0.5	Negligible	Slight beneficial
1-334	64.0	36.6	36.0	-0.6	Slight beneficial	Slight beneficial
1-335	82.0	45.4	44.5	-0.9	Substantial beneficial	Slight beneficial
1-336	62.5	36.0	35.3	-0.6	Slight beneficial	Negligible
1-337	72.1	36.5	37.0	0.5	Negligible	Slight adverse
1-338	90.3	47.9	48.2	0.4	Moderate adverse	Negligible
1-339	98.4	51.3	51.8	0.5	Moderate adverse	Slight adverse
1-340	76.4	41.3	41.5	0.3	Moderate adverse	Negligible
1-341	86.8	45.3	45.4	0.1	Negligible	Negligible
1-342	51.5	29.9	30.5	0.6	Slight adverse	Negligible
1-343	59.8	32.8	33.0	0.2	Negligible	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-344	54.5	31.3	31.3	0.1	Negligible	Negligible
1-345	62.3	33.8	34.0	0.3	Negligible	Negligible
1-346	57.8	33.6	33.9	0.2	Negligible	Negligible
1-347	53.6	31.4	31.7	0.3	Negligible	Negligible
1-348	54.3	31.6	32.1	0.5	Negligible	Negligible
1-349	48.0	28.5	28.9	0.4	Negligible	Negligible
1-350	95.2	49.5	49.6	0.1	Negligible	Negligible
1-351	62.6	34.9	35.1	0.2	Negligible	Negligible
1-352	62.1	36.1	36.6	0.5	Negligible	Slight adverse
1-353	61.8	35.9	36.3	0.4	Negligible	Slight adverse
1-354	71.9	41.5	40.6	-0.9	Moderate beneficial	Slight beneficial
1-355	65.5	38.6	38.1	-0.5	Slight beneficial	Slight beneficial
1-356	64.6	36.8	36.3	-0.6	Negligible	Slight beneficial
1-357	97.4	46.3	46.9	0.6	Moderate adverse	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-358	85.5	45.2	45.5	0.3	Moderate adverse	Negligible
1-359	53.0	31.1	31.5	0.3	Negligible	Negligible
1-360	51.5	30.2	30.3	0.1	Negligible	Negligible
1-361	62.9	35.1	35.3	0.3	Negligible	Negligible
1-362	50.6	29.5	30.0	0.6	Negligible	Negligible
1-363	49.2	29.0	29.4	0.4	Negligible	Negligible
1-364	72.0	37.5	38.3	0.8	Moderate adverse	Slight adverse
1-365	82.7	41.4	45.3	3.9	Substantial adverse	Moderate adverse
1-366	91.4	47.9	47.9	0.0	Negligible	Negligible
1-367	89.8	47.3	47.4	0.1	Negligible	Negligible
1-368	82.7	43.6	43.7	0.1	Negligible	Negligible
1-369	96.0	50.4	50.6	0.1	Negligible	Negligible
1-371	93.1	49.3	48.7	-0.7	Substantial beneficial	Slight beneficial
1-372	102.3	54.8	54.1	-0.7	Substantial beneficial	Slight beneficial

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-373	59.6	33.0	32.9	-0.1	Negligible	Negligible
1-374	60.6	35.5	36.0	0.5	Negligible	Negligible
1-375	57.5	34.3	34.9	0.6	Negligible	Negligible
1-376	64.5	37.4	37.2	-0.2	Negligible	Negligible
1-377	66.5	39.4	39.1	-0.3	Slight beneficial	Negligible
1-378	54.6	31.7	32.1	0.4	Negligible	Negligible
1-379	62.8	33.5	33.3	-0.2	Negligible	Negligible

Table 32 : Summary of annual mean PM10 results (Stage B1 construction and operation)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-1	35.7	29.0	29.3	0.2	Negligible	Negligible
1-3	29.2	24.9	25.2	0.3	Negligible	Negligible
1-4	30.2	25.2	25.4	0.2	Negligible	Negligible
1-8	35.0	29.0	29.0	0.0	Negligible	Negligible
1-12	30.1	25.8	25.7	-0.1	Negligible	Negligible
1-15	26.0	23.0	23.0	0.0	Negligible	Negligible
1-29	29.2	25.2	25.3	0.1	Negligible	Negligible
1-30	32.5	27.6	27.7	0.1	Negligible	Negligible
1-33	34.9	28.6	28.6	0.0	Negligible	Negligible
1-42	32.3	26.7	26.7	0.0	Negligible	Negligible
1-47	33.5	27.3	27.5	0.2	Negligible	Negligible
1-49	37.9	29.4	29.6	0.2	Negligible	Negligible
1-55	29.4	25.2	25.0	-0.2	Negligible	Negligible
1-67	30.9	25.6	25.9	0.3	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-71	28.3	24.3	24.2	-0.1	Negligible	Negligible
1-79	25.9	22.9	23.0	0.1	Negligible	Negligible
1-82	31.4	26.4	26.5	0.1	Negligible	Negligible
1-85	28.2	24.8	25.0	0.2	Negligible	Negligible
1-89	33.8	27.8	27.9	0.1	Negligible	Negligible
1-93	27.8	23.8	23.9	0.1	Negligible	Negligible
1-104	31.3	25.3	25.8	0.5	Negligible	Negligible
1-105	30.7	26.3	26.4	0.1	Negligible	Negligible
1-112	29.4	24.6	24.7	0.1	Negligible	Negligible
1-113	33.5	28.1	28.2	0.1	Negligible	Negligible
1-117	35.1	28.4	28.7	0.3	Negligible	Negligible
1-119	34.5	28.2	28.5	0.3	Negligible	Negligible
1-120	29.9	25.3	25.6	0.2	Negligible	Negligible
1-121	33.8	27.6	27.8	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-123	32.8	26.2	26.7	0.4	Negligible	Negligible
1-134	27.4	24.0	24.0	0.1	Negligible	Negligible
1-140	28.1	24.3	24.4	0.0	Negligible	Negligible
1-157	32.7	28.0	28.0	0.0	Negligible	Negligible
1-160	35.4	29.1	29.0	0.0	Negligible	Negligible
1-161	29.0	24.8	24.9	0.2	Negligible	Negligible
1-164	32.4	25.9	26.4	0.5	Negligible	Negligible
1-165	31.9	25.6	26.1	0.5	Negligible	Negligible
1-166	28.6	24.3	24.3	0.0	Negligible	Negligible
1-167	28.7	24.4	24.4	0.0	Negligible	Negligible
1-168	28.8	24.5	24.5	0.0	Negligible	Negligible
1-169	28.2	24.1	24.5	0.3	Negligible	Negligible
1-170	34.8	28.2	28.4	0.2	Negligible	Negligible
1-173	38.3	29.7	29.1	-0.7	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-175	37.8	29.7	30.1	0.4	Negligible	Negligible
1-178	33.3	27.1	27.4	0.3	Negligible	Negligible
1-182	35.9	28.9	29.1	0.2	Negligible	Negligible
1-184	35.3	29.7	29.8	0.1	Negligible	Negligible
1-186	28.9	24.8	25.1	0.3	Negligible	Negligible
1-187	28.9	24.8	25.0	0.2	Negligible	Negligible
1-188	28.2	24.8	25.0	0.2	Negligible	Negligible
1-191	26.9	24.1	24.2	0.2	Negligible	Negligible
1-192	27.0	24.1	24.3	0.2	Negligible	Negligible
1-201	29.3	25.3	25.3	0.1	Negligible	Negligible
1-202	30.1	25.9	25.9	0.1	Negligible	Negligible
1-204	31.0	26.5	26.5	0.1	Negligible	Negligible
1-205	33.8	28.6	28.7	0.1	Negligible	Negligible
1-206	31.7	27.1	27.2	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-207	25.9	22.8	22.9	0.1	Negligible	Negligible
1-208	25.9	22.8	22.9	0.1	Negligible	Negligible
1-212	25.9	22.9	23.0	0.1	Negligible	Negligible
1-213	25.9	22.9	23.0	0.1	Negligible	Negligible
1-214	35.5	28.8	29.0	0.2	Negligible	Negligible
1-215	36.8	29.2	29.4	0.2	Negligible	Negligible
1-220	30.1	24.8	25.2	0.4	Negligible	Negligible
1-221	31.9	25.5	26.1	0.5	Negligible	Negligible
1-222	30.2	24.9	25.2	0.4	Negligible	Negligible
1-323	28.7	24.7	24.6	-0.1	Negligible	Negligible
1-326	28.8	24.6	24.6	0.0	Negligible	Negligible
1-327	30.9	26.0	25.4	-0.6	Negligible	Negligible
1-328	28.1	24.3	24.4	0.1	Negligible	Negligible
1-329	27.9	24.1	24.3	0.1	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-330	27.8	24.1	24.2	0.1	Negligible	Negligible
1-331	31.5	26.6	26.4	-0.2	Negligible	Negligible
1-332	28.0	24.3	24.2	-0.1	Negligible	Negligible
1-333	28.2	24.6	24.4	-0.1	Negligible	Negligible
1-334	28.3	24.5	24.3	-0.1	Negligible	Negligible
1-335	32.0	26.5	26.2	-0.3	Negligible	Negligible
1-336	28.2	24.4	24.2	-0.2	Negligible	Negligible
1-337	29.1	24.4	24.5	0.1	Negligible	Negligible
1-338	34.6	28.5	28.6	0.1	Negligible	Negligible
1-339	34.9	28.4	28.5	0.1	Negligible	Negligible
1-340	30.0	25.3	25.4	0.0	Negligible	Negligible
1-341	31.7	26.2	26.2	0.0	Negligible	Negligible
1-342	25.5	22.3	22.5	0.2	Negligible	Negligible
1-343	26.8	22.9	23.0	0.0	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-344	26.7	23.3	23.3	0.0	Negligible	Negligible
1-345	28.0	23.9	24.0	0.1	Negligible	Negligible
1-346	27.5	23.9	23.9	0.0	Negligible	Negligible
1-347	26.6	23.2	23.3	0.1	Negligible	Negligible
1-348	26.7	23.3	23.5	0.1	Negligible	Negligible
1-349	24.9	21.9	22.0	0.1	Negligible	Negligible
1-350	34.2	27.8	27.8	0.0	Negligible	Negligible
1-351	28.1	24.1	24.1	0.0	Negligible	Negligible
1-352	28.0	24.2	24.3	0.1	Negligible	Negligible
1-353	27.9	24.2	24.3	0.1	Negligible	Negligible
1-354	30.0	25.6	25.4	-0.2	Negligible	Negligible
1-355	28.3	24.8	24.7	-0.1	Negligible	Negligible
1-356	28.4	24.5	24.4	-0.1	Negligible	Negligible
1-357	33.9	27.1	27.3	0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-358	32.0	26.6	26.7	0.1	Negligible	Negligible
1-359	26.5	23.2	23.3	0.1	Negligible	Negligible
1-360	25.5	22.3	22.3	0.0	Negligible	Negligible
1-361	28.2	24.1	24.2	0.1	Negligible	Negligible
1-362	25.4	22.2	22.4	0.2	Negligible	Negligible
1-363	25.1	22.1	22.2	0.1	Negligible	Negligible
1-364	29.4	24.6	24.8	0.1	Negligible	Negligible
1-365	32.0	25.6	26.1	0.5	Negligible	Negligible
1-366	33.7	27.9	27.8	0.0	Negligible	Negligible
1-367	33.3	27.6	27.6	0.0	Negligible	Negligible
1-368	31.0	25.9	25.9	0.0	Negligible	Negligible
1-369	34.7	28.5	28.4	0.0	Negligible	Negligible
1-371	31.1	26.5	26.3	-0.2	Negligible	Negligible
1-372	32.9	27.5	27.3	-0.2	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-373	27.5	23.7	23.7	0.0	Negligible	Negligible
1-374	27.8	24.5	24.7	0.1	Negligible	Negligible
1-375	27.1	24.1	24.3	0.2	Negligible	Negligible
1-376	28.2	24.4	24.3	-0.1	Negligible	Negligible
1-377	28.2	24.5	24.4	-0.1	Negligible	Negligible
1-378	26.7	23.3	23.5	0.1	Negligible	Negligible
1-379	27.9	23.9	23.8	0.0	Negligible	Negligible

Table 33 : Summary of 24-hour mean PM10 results (Stage B1 construction and operation)

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-1	53	24	25	1	Negligible	Negligible
1-3	25	12	13	1	Negligible	Negligible
1-4	28	13	13	0	Negligible	Negligible
1-8	49	24	24	0	Negligible	Negligible
1-12	28	14	14	0	Negligible	Negligible
1-15	15	8	8	0	Negligible	Negligible
1-29	25	13	13	0	Negligible	Negligible
1-30	38	20	20	0	Negligible	Negligible
1-33	49	23	23	0	Negligible	Negligible
1-42	37	17	17	0	Negligible	Negligible
1-47	42	19	19	1	Negligible	Negligible
1-49	66	25	26	1	Negligible	Negligible
1-55	25	13	12	-1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-67	31	14	15	1	Negligible	Negligible
1-71	22	11	11	0	Negligible	Negligible
1-79	15	8	8	0	Negligible	Negligible
1-82	33	16	16	0	Negligible	Negligible
1-85	21	12	12	0	Negligible	Negligible
1-89	43	20	20	0	Negligible	Negligible
1-93	20	10	10	0	Negligible	Negligible
1-104	33	13	14	1	Slight adverse	Negligible
1-105	30	16	16	0	Negligible	Negligible
1-112	25	11	12	0	Negligible	Negligible
1-113	42	21	21	0	Negligible	Negligible
1-117	50	22	23	1	Negligible	Negligible
1-119	47	21	22	1	Negligible	Negligible
1-120	27	13	14	1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-121	44	19	20	1	Negligible	Negligible
1-123	39	16	17	1	Negligible	Negligible
1-134	19	10	10	0	Negligible	Negligible
1-140	21	11	11	0	Negligible	Negligible
1-157	39	21	21	0	Negligible	Negligible
1-160	52	24	24	0	Negligible	Negligible
1-161	24	12	12	0	Negligible	Negligible
1-164	37	15	16	1	Negligible	Negligible
1-165	35	14	15	1	Slight adverse	Negligible
1-166	23	11	11	0	Negligible	Negligible
1-167	23	11	11	0	Negligible	Negligible
1-168	23	11	11	0	Negligible	Negligible
1-169	21	10	11	1	Negligible	Negligible
1-170	49	21	22	1	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-173	68	26	24	-2	Slight beneficial	Negligible
1-175	65	27	28	1	Negligible	Negligible
1-178	41	18	19	1	Negligible	Negligible
1-182	54	24	24	1	Negligible	Negligible
1-184	51	26	27	0	Negligible	Negligible
1-186	24	12	13	1	Negligible	Negligible
1-187	24	12	13	1	Negligible	Negligible
1-188	21	12	12	0	Negligible	Negligible
1-191	18	10	11	0	Negligible	Negligible
1-192	18	10	11	0	Negligible	Negligible
1-201	25	13	13	0	Negligible	Negligible
1-202	28	15	15	0	Negligible	Negligible
1-204	31	16	16	0	Negligible	Negligible
1-205	44	23	23	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-206	34	18	18	0	Negligible	Negligible
1-207	15	8	8	0	Negligible	Negligible
1-208	15	8	8	0	Negligible	Negligible
1-212	15	8	8	0	Negligible	Negligible
1-213	15	8	8	0	Negligible	Negligible
1-214	52	23	24	1	Negligible	Negligible
1-215	59	25	26	1	Negligible	Negligible
1-220	28	12	13	1	Negligible	Negligible
1-221	35	14	15	1	Slight adverse	Negligible
1-222	28	12	13	1	Negligible	Negligible
1-323	23	12	12	0	Negligible	Negligible
1-326	23	11	11	0	Negligible	Negligible
1-327	31	15	13	-2	Slight beneficial	Negligible
1-328	21	11	11	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-329	20	10	11	0	Negligible	Negligible
1-330	20	10	11	0	Negligible	Negligible
1-331	33	16	16	0	Negligible	Negligible
1-332	21	11	11	0	Negligible	Negligible
1-333	21	11	11	0	Negligible	Negligible
1-334	22	11	11	0	Negligible	Negligible
1-335	35	16	15	-1	Negligible	Negligible
1-336	21	11	11	0	Negligible	Negligible
1-337	24	11	11	0	Negligible	Negligible
1-338	47	22	23	0	Negligible	Negligible
1-339	49	22	22	0	Negligible	Negligible
1-340	28	13	13	0	Negligible	Negligible
1-341	34	16	15	0	Negligible	Negligible
1-342	14	7	7	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-343	17	8	8	0	Negligible	Negligible
1-344	17	9	9	0	Negligible	Negligible
1-345	21	10	10	0	Negligible	Negligible
1-346	19	10	10	0	Negligible	Negligible
1-347	16	8	9	0	Negligible	Negligible
1-348	17	9	9	0	Negligible	Negligible
1-349	12	6	6	0	Negligible	Negligible
1-350	46	20	20	0	Negligible	Negligible
1-351	21	10	10	0	Negligible	Negligible
1-352	21	11	11	0	Negligible	Negligible
1-353	20	10	11	0	Negligible	Negligible
1-354	27	14	13	-1	Negligible	Negligible
1-355	22	12	12	0	Negligible	Negligible
1-356	22	11	11	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-357	44	18	18	1	Negligible	Negligible
1-358	35	17	17	0	Negligible	Negligible
1-359	16	8	9	0	Negligible	Negligible
1-360	14	7	7	0	Negligible	Negligible
1-361	21	10	11	0	Negligible	Negligible
1-362	13	7	7	0	Negligible	Negligible
1-363	13	6	7	0	Negligible	Negligible
1-364	25	12	12	0	Negligible	Negligible
1-365	35	14	15	1	Slight adverse	Negligible
1-366	43	20	20	0	Negligible	Negligible
1-367	41	19	19	0	Negligible	Negligible
1-368	32	15	15	0	Negligible	Negligible
1-369	48	22	22	0	Negligible	Negligible
1-371	32	16	16	0	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance
	2012 baseline	Without scheme	With scheme			
1-372	39	19	19	-1	Negligible	Negligible
1-373	19	10	10	0	Negligible	Negligible
1-374	20	11	12	0	Negligible	Negligible
1-375	18	10	11	0	Negligible	Negligible
1-376	21	11	11	0	Negligible	Negligible
1-377	21	11	11	0	Negligible	Negligible
1-378	17	9	9	0	Negligible	Negligible
1-379	20	10	10	0	Negligible	Negligible

4.4.6 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES. AQMAs cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

4.4.7 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the revised scheme. Many receptor locations will experience an increase in concentrations of NO2 with the revised scheme and some of these adverse impacts will be moderate or adverse at assessed receptors. In these cases, the effects will be significant, a result mainly brought about by the application of the revised assessment methodology. No significant effects for PM10 are reported. Some receptor locations will experience a decrease in concentrations of NO2 and PM10 with the revised scheme.

4.4.8 Overall, given the factors above, air quality effects are considered to be significant, both adverse and beneficial, although limited in spatial extent.

4.5 Operation (2033 onwards)

4.5.1 No detailed assessment has been undertaken for the full operation of the revised scheme post-2033. It is anticipated that vehicle emissions and background concentrations will be significantly reduced by that time, compared to the stage B1 construction and operation scenario.

5 Air quality assessment - combustion plant emissions

5.1 Overall assessment approach

5.1.1 The air quality assessment for the Euston station combustion plant emissions has used two different approaches based on the scale of changes in emissions. The combustion plant was screened according to the requirements of the Clean Air Act (1993), as detailed in the HS2 Air quality technical note – Guidance on assessment methodology[24] . Further analysis on stack height was carried out using the D1 method[25].

5.1.2 Stationary combustion plant must comply with the provisions of the Clean Air Act (1993). This legislation applies to plant burning more than 45.4kg/hr of solid fuel or thermal input of liquid or gaseous fuel of less than 366.4kW (or combined plant sharing flues). Boilers of a smaller size are not covered under the provisions of the Clean Air Act (1993) and so any requirements of this legislation do not apply.

[24] Arup/Aecom for HS2 (2015) HS2Topic: Air quality; Technical Note– Guidance on Assessment Methodology.
[25] Her Majesty's Inspectorate of Pollution (1993) Technical Guidance Note (Dispersion) D1 Guidelines on Discharge Heights for Polluting Emissions HMSO.

5.1.3 The D1 methodology is used to determine "the heights of discharge stacks for polluting emissions, which should be adequate in normal circumstances, to render an emission harmless"[26].

5.2 Clean Air Act requirements

5.2.1 There are two combustion plants currently in operation at Euston Station, these are:

- the main boiler room with two diesel oil fired boilers, which is used to heat the main station building, concourse and offices, and all associated hot water; and
- the Hardwick House boiler room with three diesel oil fired boilers, which is used to heat the space and water in Hardwick House (an office building).

5.2.2 Following changes to Euston Station as part of the HS2 revised scheme, new gas fired boilers will be installed to replace the existing plant. The current option being considered is to provide one heating plant area in the basement to serve the whole station.

5.2.3 The existing and proposed combustion plant at Euston Station are summarised in Table 34.

Table 34 : Summary of stationary sources at Euston Station

Stationary source	Fuel type	Annual fuel consumption[27]	Equivalent annual average thermal input (kW)
Euston Station - Main Boiler House	Diesel oil	193,466 litres	239
Euston Station - Hardwick House	Diesel oil	68,770 litres	85
Future Euston Combustion Plant	Natural gas	5,900,000 kWh	674

5.2.4 The boilers in the existing station are too small to fall under the requirements of the Clean Air Act (1993). The proposed future combustion plant at Euston station is large enough to fall under the requirements of the Clean Air Act (1993).

5.2.5 A further assessment, using the D1 methodology, has therefore been undertaken for the proposed future combustion plant. For comparison purposes the existing combustion plant has also been assessed in this way.

5.2.6 There is also some minor gas use by the catering facilities, including six air handling units (serving Ryedale House and two washing and food preparation facilities). These are too small to be covered under the provisions of the Clean Air Act (1993) and their impacts on air quality are negligible and so have not been considered further in this assessment.

5.3 Model inputs for D1 assessment

5.3.1 The D1 methodology is based on instantaneous emissions and was designed to consider short term peak concentrations, rather than the annual average considered

[26] Ibid.
[27] Annual average fuel use for the existing combustion plants is based on fuel deliveries during the financial year April 2011 to March 2012.

in the Clean Air Act (1993). Space and water heating boilers are not operated continuously at the same settings throughout the year; there are seasonal and daily variations in their use. These hours and the estimated hourly fuel use are set out in Table 35.

Table 35 : Operational hours and estimated hourly fuel use of existing Euston Station combustion plant

	Hours of operation	Hourly fuel use (litres/h) - main boiler house	Hourly fuel use (litres/h) - Hardwick House
Annual average hourly fuel use (for comparison)	-	**22.1**	**7.9**
Winter office hours (October - March)	**8am-6pm**	**58.2**	31.4
Winter non-office station hours	**6am-8am and 6pm - midnight**	**29.1**	-
Summer station hours (hot water only)	**6am-midnight**	**13.6**	**6.3**

5.3.2 The characteristics of the boilers in the main boiler room have been provided by the boiler manufacturer for this fuel type and firing rate. Only limited data were available for the boilers in Hardwick House and so professional estimates and emission factors[28] have been used to calculate the combustion data. The future scenario uses input data as described in the HS2 Air Quality Technical Note – guidance on assessment methodology.

5.3.3 The firing rate for the main boiler room during winter office hours is 25% of the capacity of one boiler. This is the minimum firing rate that can be achieved with these boilers. For lower firing rates, the boilers are assumed to be operated using an on-off cycle, which allows the boiler to provide lower overall levels of heat and hot water, as needed. The D1 assessment has been carried out using the worst case instantaneous emissions for the existing combustion plants, during winter office hours.

5.3.4 The emission characteristics for the proposed future combustion plant are based on those set out in HS2 Air Quality Technical Note – guidance on assessment methodology for a boiler of this size, as the detailed design of the combustion plant is not complete. These data are the characteristics for short term operation, and are based on a pessimistic combustion plant design. The actual combustion plant will comply with all relevant guidance and emission standards and is likely to have lower impacts than this worst case assessment.

5.3.5 This assessment takes into account the buildings under and around the stack, in accordance with the D1 methodology. This includes the existing station building, Hardwick House, for the existing boilers, and the buildings which will be there in the future (based on best available knowledge at this time). Where there is uncertainty over locations, pessimistic assumptions regarding locations have been assumed.

5.3.6 The D1 methodology requires background concentrations of each pollutant (the 98th percentile of the 1 hour mean concentration). Current background concentrations are taken from Bloomsbury monitoring site, as the local site most representative of

[28] Defra; National Atmospheric Emission Inventory database; http://naei.defra.gov.uk/; Accessed July 2013.

Euston station. For the future scenario, the background concentration is calculated by multiplying the annual average background concentration predicted by Defra for this location in 2026 by a factor of 2.5, as set out in the D1 methodology.

5.3.7 The inputs used in the D1 assessment are set out in Table 36.

Table 36 : D1 assessment inputs

D1 Inputs	Euston Station - main boiler house	Euston Station - Hardwick House	Future Euston combustion plant
Total Flow (actual m3/s)	0.31	0.22	0.31
Discharge Temperature (°C)	157	140	71
NO2 emissions rate	125 mg /Nm^3 (equivalent to 0.032 g/s)[29]	0.014 g/s	0.0077 g/s
PM emissions rate	<40 mg /Nm^3 (equivalent to <0.010 g/s)	0.019 g/s	negligible
Height of any buildings within 5 x Um[30] (m)	7.9	11.9	Design not yet finalised
Width of any buildings within 5 x Um (m)	206	112	Design not yet finalised
Background Concentration (98%ile of 1-hour average)	0.101 mg/m^3 NO2 0.057 mg/m^3 PM10 (Bloomsbury AURN data for 2012)		0.075 mg/m^3 NO2 (from LAQM background maps for 2026)[31]
Guidance Concentration of Pollutant at stack conditions	0.2 mg/m^3 NO2 0.15 mg/m^3 PM		

5.3.8 In addition to the buildings under and around the stack for the proposed combustion plant, the proposed HS2 buildings could also be affected by the plume from the stack. The D1 methodology states: "Buildings taller than the discharge stack but at distance beyond 5Um[30] may cause plume meandering. As a rough guide, any building taller than the discharge stack within a distance of five building heights may have this effect. There may also be problems due to the plume running into the taller building. Particular attention should be given to the possibility of contaminating nearby ventilation inlets."

5.3.9 The detailed design of the combustion plant and the HS2 building roof will take these potential factors into consideration to ensure that these do not affect local air quality and the HS2 building ventilation.

5.4 Model outputs for D1 assessment

5.4.1 The results from the D1 assessment are shown in Table 37. As can be seen in all cases the actual stack height (or proposed stack height for the future combustion plant) is greater than the stack height recommended by the D1 assessment.

[29] Based on stack conditions of6.5% Moisture content and 14% Oxygen content, where reference conditions are 16% Oxygen content and dry. These are estimated figures, but sensitivity analysis has shown that in this instance, these do not affect the conclusions of the assessment.
[30] Um represents the uncorrected discharge height.
[31] Defra; Estimated Background Air Pollution Maps (base year 2011) downloaded from http://uk-air.defra.gov.uk/data/laqm-background-home. Accessed July 2015.

Table 37 : A comparison of actual and D1 recommended stack heights for the Euston combustion plants

Stationary Source	Actual Stack Height	D1 recommended stack height (for NO_2)	D1 recommended stack height (for PM)
Euston Station - Main Boiler House	17.8	11	10
Euston Station - Hardwick House	15.0	14	15
Future Euston Combustion Plant	Design not yet finalised	Design not yet finalised	-

5.4.2 The D1 methodology also sets out a number of other considerations, as follows:

- the minimum discharge velocity for a stationary source of this magnitude is 10 m/s;
- no discharge stack should be less than 3m above the ground or any adjacent areas to which there is general access, for example, roof areas and elevated walkways; and
- a discharge stack should be at least 3m above any opening windows or ventilation air inlets.

5.4.3 The proposed combustion plant at Euston meets all these criteria.

5.5 Other criteria

5.5.1 The Mayor of London's Supplementary Planning Guidance on Sustainable Design and Construction[32] sets emission limits for combustion plant in new development proposals.

5.5.2 The guidance states "Where individual and/or communal gas boilers are installed in commercial and domestic buildings they should achieve a NOx rating of less than 40mgNOx/kWh."

5.5.3 The proposed combustion plant for Euston station is still under design, and pessimistic characteristics regarding locations have been assumed for this assessment. The actual combustion plant will comply with all relevant emission standards.

5.6 Assessment of significance

5.6.1 The assessment of the impacts on air quality from the Euston Station combustion plants has taken into account the following factors.

- The emissions from the existing combustion plant (the main boiler room and Hardwick House) are too small to be covered under the provisions of the Clean Air Act (1993) and their impacts on air quality are negligible.
- The proposed future combustion plant at Euston Station is still small (around twice as large as the current plant and using cleaner fuel), but is large enough

[32] Mayor of London (2014) Supplementary Planning Guidance: Sustainable Design and Construction.

to be considered under the Clean Air Act (1993).

- The actual and proposed stack heights are greater than the minimum stack heights recommended by the D1 methodology, which is designed to determine the stack height required to render an emission harmless.

5.6.2 Taking these into consideration, no significant effects are anticipated for air quality from the proposed combustion plant at Euston.

6 References

City of Westminster, (2013), Air Quality Action Plan 2013-2018.

City of Westminster, (2011), Air Quality Progress Report.

City of Westminster, (2010), Air Quality Progress Report.

City of Westminster, (2011), Core Strategy Policy, CS30.

City of Westminster, (2010), Unitary Development Plan.

Department for Environment, Food and Rural Affairs (Defra), (2012), Defra background maps 2010; http://laqm.defra.gov.uk/maps/maps2010.html; Accessed: July 2013.

Department of Food Environment and Rural Affairs, (2007), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland.

Environment Agency, What's in your Backyard?; http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

Environmental Protection UK, (2010), Development Control: Planning for Air Quality (2010). Greater London Authority (GLA), (2011), The London Plan: Spatial Development Strategy for Greater London, GLA, London.

Greater London Authority, (2010), Clearing the Air: The Mayor's Air Quality Strategy, GLA, London.

Greater London Authority, (2010), Draft Climate Change Adaptation Strategy for London, GLA, London

Greater London Authority, (2010), London Atmospheric Emissions Inventory 2008 Concentration Maps; http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.

Greater London Authority, (2006), Sustainable Design and Construction: The London Plan Supplementary Planning Guidance, GLA, London.

Greater London Authority, (2011), The London Plan: Spatial Development Strategy for Greater London, GLA, London.

Highways Agency, (2007), The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07)

Institute of Air Quality Management (IAQM), (2014), Guidance on the assessment of dust from demolition and construction.

Kings College London, www.londonair.org.uk, Accessed: May 2013

London Borough of Camden, (2013), Air Quality Action Plan 2013-2015 (draft for consultation)

London Borough of Camden, (2012), Air Quality Updating and Screening Assessment.

London Borough of Camden, (2010), Core Strategy Policy, CS16.

Pollution Prevention and Control Act 1999 (c.24). London, Her Majesty's Stationery Office.

The Environmental Permitting (England and Wales) Regulations 2010 (SI 210 No. 675). London, Her Majesty's Stationery Office.

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 2 and Additional Provision 3 Environmental Statement

Volume 5 | Technical appendices

Air quality

AQ-001-002

Environmental topic:	Air quality	AQ
Appendix name:	Data appendix	001
Community forum area:	Camden Town	002

Contents

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1 Introduction

1.1 Structure of this air quality assessment appendix

1.1.1 This appendix provides an update to Appendix AQ-001-002 of the main Environmental Statement (ES) (Volume 5, Appendix AQ-001-002). This update should be read in conjunction with Appendix AQ-001-002 of the main ES.

1.1.2 This appendix is structured as follows: air quality assessment - road traffic (Section 2).

1.1.3 Maps referred to throughout this air quality appendix are contained in the Volume 5 Air Quality Map Book, within this Supplementary Environmental Statement 2 (SES2) and Additional Provision 3 ES (AP3 ES).

1.2 Scope of this assessment

1.2.1 This air quality assessment considers changes to local air quality as a result of:

- changes to the design or construction assumptions which do not require changes to the Bill;
- changes to the design of the scheme that are outside the existing limits of the Bill (i.e. AP3 amendments); and
- updates to traffic models.

Methodology, data sources and design criteria

1.2.2 The assessment scope, key assumptions and limitations and the methodology for determining significance of effects for air quality are as set out in the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES.

2 Air quality assessment - road traffic

2.1 Overall assessment approach

2.1.1 The overall assessment approach remains the same as described in Appendix AQ-001-002 of the main ES. Where changes to this approach have been employed, these are detailed in Section 2.2.

2.1.2 As detailed in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, since the publication of the main ES, the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have issued new guidance[1] on assessing the impact of traffic emissions, which introduces a new set of impact descriptors. The 2015 IAQM/EPUK guidance differs from the previous 2010 guidance[2], which was used in the main ES, in that it treats a similar increase in ambient pollution concentrations as having a greater impact, and therefore more likely to have a significant effect. Where applicable, a comparison has been provided in the results tables between the new impact descriptors, those that would arise if the previous guidance was used and what was reported in the main ES.

2.2 Model inputs and verification

Model verification

2.2.1 Since the model predicts NOx contributions for the modelled roads, this was initially compared to the NOx road contribution derived from NOx concentrations (where available) measured at monitoring sites and Department of Environment, Food and Rural Affairs (Defra) background maps.

2.2.2 Roadside monitoring sites were chosen from across the traffic model area, which extends both west and north of the study area. This allowed a greater number of sites to be included in the verification. Sites where nearby busy roads were not included in the traffic model data set (and which, therefore, could not be modelled correctly as roadside sites with the traffic data set) were excluded from assessment. The results of this comparison are shown in Table 1.

Table 1 : Comparison of monitored and modelled NOx concentrations for verification

Site	Monitored total NO2 (µg/m^3)	Monitored total NOx (µg/m^3)	Background NO2 (µg/m^3)	Background NOx (µg/m^3)	Monitored road NOx (µg/m^3)	Modelled road NOx (µg/m^3)
London Borough of Camden (LBC) - Euston Road (Automatic Urban and Rural Network (AURN))	106.1	350.0	47.8	84.3	58.3	265.7
LBC - Shaftesbury	71.2	163.0	53.7	97.0	17.5	66.0

[1] Moorcroft and Barrowcliffe et al, (2015) *Land-Use Planning and Development Control: Planning for Air Quality*, London: Institute of Air Quality Management.
[2] EPUK, (2010), Development Control: Planning for Air Quality.

Site	Monitored total NO2 (µg/m3)	Monitored total NOx (µg/m3)	Background NO2 (µg/m3)	Background NOx (µg/m3)	Monitored road NOx (µg/m3)	Modelled road NOx (µg/m3)
Avenue (AURN)						
LBC - Euston Road	82.1	N/A	47.8	83.7	34.3	110.0
LBC - Kentish Town Road	59.0	N/A	33.9	55.5	25.1	67.7
LBC - 47 Fitzjohn's Avenue	61.2	N/A	32.5	52.7	28.7	79.0
LBC - Bloomsbury Street	71.6	N/A	51.0	92.6	20.6	61.2
LBC - Camden Road	67.4	N/A	37.1	62.2	30.3	87.4
LBC - Chetwynd Road	43.7	N/A	31.7	51.3	12.0	28.4
LBC - Mill Lane/ West End Lane	52.0	N/A	32.4	52.6	19.6	49.9
LBC - Swiss Cottage	72.7	N/A	37.4	62.9	35.3	106.1

2.2.3 The calculated model adjustment factor for the road contribution of NOx was 2.19. This factor is the gradient of the straight line function obtained by plotting the modelled NOx concentrations versus the (unadjusted) monitored NOx concentrations. This was applied to all NOx results from the ADMS-Roads modelling. This is line with Defra guidance[3] on model verification.

2.2.4 A final check was then made to compare the total NO2 concentrations from the modelling to the monitored data. This is shown in Table 2.

Table 2 : Comparison of monitored and modelled annual average NO2 concentrations

Site	Monitored concentration (µg/m3)	Modelled concentration (µg/m3)	Difference ((modelled - monitored)/monitored) x 100
LBC - Euston Road (AURN)	106.1	82.8	-21.9%
LBC - Shaftesbury Avenue (AURN)	71.2	70.9	-0.5%
LBC - Euston Road	82.1	95.3	16.1%
LBC - Kentish Town Road	59.0	61.4	4.2%

[3] Department for Environment, Food and Rural Affairs (2009) Technical Guidance Note LAQM TG(09).

Site	Monitored concentration (µg/m^3)	Modelled concentration (µg/m^3)	Difference ((modelled - monitored)/monitored) x 100
LBC - 47 Fitzjohn's Avenue	61.2	38.5	-37.2%
LBC - Bloomsbury Street	71.6	85.8	19.8%
LBC - Camden Road	67.4	71.2	5.6%
LBC - Chetwynd Road	43.7	39.2	-10.2%
LBC - Mill Lane/ West End Lane	52.0	49.4	-5.2%
LBC - Swiss Cottage	72.7	77.5	6.7%

2.2.5 As there was no consistent under- or over-prediction and the majority of modelled NO2 concentrations were within 25% of the monitored concentrations, no further adjustment was undertaken.

2.3 Stage A construction (2017-2026)

2.3.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

2.3.2 Three peak construction traffic scenarios, described in Volume 2 Section 3.9, have been assessed during the Stage A period. Although the three scenarios assessed occur in different years, their assessment assumes a pessimistic approach with 2017 vehicle emission rates and 2017 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in each stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. These scenarios have been assessed against the relevant future baseline cases without the AP3 revised scheme.

Receptors assessed

2.3.3 Receptors assessed are listed in Table 3.

Table 3 : Modelled receptors (Stage A construction phase)

Receptor	Description/location	Ordnance Survey (OS) coordinates
2-1	166 Camden High Street	528932, 183878
2-8	10 Chalk Farm Road	528680, 184184
2-9	187 Camden High Street	528906, 183846
2-17	123 Castlehaven Road	528788, 184705

Receptor	Description/location	Ordnance Survey (OS) coordinates
2-25	115-119 Camden High Street	529002, 183671
2-38	62 Camden Road	529091, 184025
2-50	244 Camden High Street	528680, 184157
2-51	267A Camden High Street	528764, 184099
2-52	226A Camden High Street	528777, 184060
2-53	265 Camden High Street	528793, 184069
2-54	224 Camden High Street	528794, 184041
2-55	221B Camden High Street	528810, 184052
2-56	239 Camden High Street	528846, 183952
2-57	199 Camden High Street	528827, 183986
2-58	178 Camden High Street	528878, 183897
2-59	187 Camden High Street	528886, 183923
2-61	166 Camden High Street	528935, 183849
2-63	146 Camden High Street	528931, 183794
2-64	4 Greenland Road	528954, 183802
2-65	149 Bayham Street	528986, 183875
2-66	4 Camden Road	528978, 183888
2-67	8A Camden Road	528961, 183915
2-68	144 Bayham Street	528974, 183929
2-69	146 Bayham Street	529001, 183885
2-70	21 Pratt Street	528993, 183898
2-71	Brehon House, 17-19 Pratt Street	529100, 183725
2-72	114 Bayham Street	529086, 183715
2-73	4 Kentish Town Road	529042, 183818

Receptor	Description/location	Ordnance Survey (OS) coordinates
2-74	12 Kentish Town Road	528932, 183928
2-79	63 Kentish Town Road	528969, 184283
2-80	67 Kentish Town Road	528936, 184276
2-81	46A Kentish Town Road	528944, 184302
2-82	1 Jeffrey's Street	528971, 184308
2-83	3 Oval Road	528619, 183729
2-84	67 Jamestown Road	528604, 183968
2-85	61 Parkway	528748, 183710
2-86	40 Delancey Street	528835, 183589
2-87	70 Delancey Street	528749, 183584
2-88	38 Delancey Street	528859, 183593
2-89	25 Parkway	528828, 183811
2-90	64 Camden Road	529109, 184033
2-91	178A Royal College Street	529210, 184181
2-92	22 Castlehaven Road	528791, 184286
2-93	84 Castlehaven Road	528806, 184568
2-94	15 Crinan Street	530369, 183400
2-95	85 Jamestown Road	528552, 183957
2-96	18 Prince of Wales Road	528785, 184725
2-97	14 Prince of Wales Road	528811, 184726
2-98	Academic House, 24-28 Oval Road	528544, 183973
2-99	2 Oval Road	528591, 183859
2-100	226 Arlington Road	528712, 184002
2-101	106 Camden High Street	529019, 183686

Receptor	Description/location	Ordnance Survey (OS) coordinates
2-102	103-105 Parkway	528688, 183629
2-103	107 Parkway	528679, 183617

Background concentrations

2.3.4 The background concentrations used in the assessment are shown in Table 4 and taken from the Defra maps.

Table 4 : Background 2012 and 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(2-1) 166 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-8) 10 Chalk Farm Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-9) 187 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-17) 123 Castlehaven Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-25) 115-119 Camden High Street	67.9	39.8	25.0	57.1	34.3	23.4
(2-38) 62 Camden Road	62.2	37.1	24.4	52.5	32.1	22.9
(2-50) 244 Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-51) 267A Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-52) 226A Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-53) 265 Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-54) 224 Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-55) 221B Camden High Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-56) 239 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-57) 199 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-58) 178 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-59) 187 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-61) 166 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(2-63) 146 Camden High Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-64) 4 Greenland Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-65) 149 Bayham Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-66) 4 Camden Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-67) 8A Camden Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-68) 144 Bayham Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-69) 146 Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(2-70) 21 Pratt Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-71) Brehon House, 17-19 Pratt Street	67.9	39.8	25.0	57.1	34.3	23.4
(2-72) 114 Bayham Street	67.9	39.8	25.0	57.1	34.3	23.4
(2-73) 4 Kentish Town Road	67.9	39.8	25.0	57.1	34.3	23.4
(2-74) 12 Kentish Town Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-79) 63 Kentish Town Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-80) 67 Kentish Town Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-81) 46A Kentish Town Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-82) 1 Jeffrey's Street	58.4	35.2	23.7	49.2	30.5	22.2
(2-83) 3 Oval Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-84) 67 Jamestown Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-85) 61 Parkway	59.9	36.1	23.7	50.6	31.2	22.1
(2-86) 40 Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-87) 70 Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-88) 38 Delancey Street	59.9	36.1	23.7	50.6	31.2	22.1
(2-89) 25 Parkway	59.9	36.1	23.7	50.6	31.2	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(2-90) 64 Camden Road	62.2	37.1	24.4	52.5	32.1	22.9
(2-91) 178A Royal College Street	62.2	37.1	24.4	52.5	32.1	22.9
(2-92) 22 Castlehaven Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-93) 84 Castlehaven Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-94) 15 Crinan Street	68.1	40.4	25.0	56.9	34.7	23.4
(2-95) 85 Jamestown Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-96) 18 Prince of Wales Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-97) 14 Prince of Wales Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-98) Academic House, 24-28 Oval Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-99) 2 Oval Road	59.9	36.1	23.7	50.6	31.2	22.1
(2-100) 226 Arlington Road	58.4	35.2	23.7	49.2	30.5	22.2
(2-101) 106 Camden High Street	67.9	39.8	25.0	57.1	34.3	23.4
(2-102) 103-105 Parkway	59.9	36.1	23.7	50.6	31.2	22.1
(2-103) 107 Parkway	59.9	36.1	23.7	50.6	31.2	22.1

Detailed modelling results

2.3.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor derived using the approach in the previous EPUK guidance has also been provided, together with that reported in the main ES. Results presented correspond to the greatest impact at each receptor from the three scenarios assessed.

2.3.6 As set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, Environmental Protection UK (EPUK) and the IAQM have issued new guidance[4] on assessing air quality impacts. The main difference from the previous guidance is that it describes a similar increase in pollutant concentrations as having greater adverse impact, and therefore having a greater potential for significant effects. For example, where the baseline NO2 concentration is under the standard at

[4] Moorcroft and Barrowcliffe et al., (2015), Land-Use Planning and Development Control: Planning for Air Quality. London: Institute of Air Quality Management.

38µg/m^3 and increases by 1.5µg/m^3 to 39.5µg/m^3 with the scheme, the previous guidance defined this as a slight adverse impact, while the new guidance defines this as a moderate adverse impact. The increased emphasis on severity in the descriptors in the new guidance is particularly accentuated for receptors where baseline concentrations are at or above the objective value, as is the case in parts of London. This is illustrated in the results in Table 5. The 6th column shows the impact descriptor using the 2015 guidance, and the 7th column shows the impact descriptor using the 2010 guidance. It can be seen that more of the descriptors using the 2015 guidance are moderate or substantial than with the 2010 guidance, for the same change in annual mean NO2 concentration.

Table 5 : Summary of annual mean NO_2 results (Stage A construction phase)

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-1	69.2	56.3	56.7	0.4	Moderate adverse	Negligible	Negligible
2-8	64.3	53.2	54.2	0.9	Substantial adverse	Slight adverse	Slight adverse
2-9	71.5	58.6	58.7	0.2	Negligible	Negligible	Negligible
2-17	52.5	44.6	44.9	0.3	Moderate adverse	Negligible	N/A
2-25	69.4	56.8	57.1	0.3	Moderate adverse	Negligible	N/A
2-38	79.3	63.4	63.7	0.4	Moderate adverse	Negligible	N/A
2-50	56.1	46.8	47.5	0.7	Substantial adverse	Slight adverse	Negligible
2-51	57.6	48.1	49.0	0.9	Substantial adverse	Slight adverse	Negligible
2-52	57.5	48.1	48.9	0.8	Substantial adverse	Slight adverse	Negligible
2-53	61.0	51.0	52.0	1.0	Substantial adverse	Slight adverse	Negligible
2-54	56.9	47.3	47.9	0.6	Substantial adverse	Slight adverse	Negligible
2-55	59.0	49.1	49.8	0.7	Substantial adverse	Slight adverse	Negligible
2-56	54.8	45.4	45.6	0.2	Moderate adverse	Negligible	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-57	54.2	45.0	45.2	0.3	Moderate adverse	Negligible	Negligible
2-58	57.8	47.7	47.8	0.2	Negligible	Negligible	Negligible
2-59	59.9	49.2	49.5	0.3	Moderate adverse	Negligible	Negligible
2-61	68.1	55.5	55.8	0.3	Moderate adverse	Negligible	Negligible
2-63	62.1	50.7	50.8	0.2	Negligible	Negligible	Negligible
2-64	70.2	56.8	57.1	0.3	Moderate adverse	Negligible	Negligible
2-65	64.8	53.6	54.1	0.5	Moderate adverse	Slight adverse	Slight adverse
2-66	65.0	53.3	53.4	0.2	Negligible	Negligible	Slight adverse
2-67	68.7	54.9	55.5	0.6	Substantial adverse	Slight adverse	Slight beneficial
2-68	77.2	61.2	61.8	0.7	Substantial adverse	Slight adverse	Slight beneficial
2-69	70.0	57.6	57.8	0.2	Moderate adverse	Negligible	Slight adverse
2-70	67.2	54.5	54.8	0.3	Moderate adverse	Negligible	Negligible
2-71	73.4	60.8	61.1	0.3	Moderate adverse	Negligible	Slight adverse
2-72	69.4	57.2	57.5	0.3	Moderate adverse	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-73	69.0	56.9	57.1	0.2	Negligible	Negligible	Slight adverse
2-74	67.4	55.1	55.5	0.4	Moderate adverse	Negligible	Slight beneficial
2-79	69.0	58.3	58.5	0.2	Moderate adverse	Negligible	Negligible
2-80	62.9	53.3	53.7	0.4	Moderate adverse	Slight adverse	Negligible
2-81	62.9	53.1	53.2	0.1	Negligible	Negligible	Negligible
2-82	60.5	51.1	51.0	-0.1	Negligible	Negligible	Negligible
2-83	49.1	42.1	43.0	0.9	Moderate adverse	Slight adverse	N/A
2-84	46.1	39.8	40.5	0.7	Moderate adverse	Slight adverse	N/A
2-85	61.6	51.3	52.5	1.2	Substantial adverse	Slight adverse	N/A
2-86	54.3	45.5	46.8	1.4	Substantial adverse	Slight adverse	N/A
2-87	62.5	51.4	52.2	0.8	Substantial adverse	Slight adverse	N/A
2-88	55.7	46.7	48.2	1.5	Substantial adverse	Slight adverse	N/A
2-89	67.5	56.0	57.3	1.3	Substantial adverse	Slight adverse	N/A
2-90	78.0	64.1	64.1	0.0	Negligible	Negligible	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-91	76.7	64.2	64.5	0.3	Moderate adverse	Negligible	N/A
2-92	55.4	46.9	47.6	0.7	Substantial adverse	Slight adverse	N/A
2-93	48.8	42.3	42.8	0.6	Moderate adverse	Slight adverse	N/A
2-94	52.3	44.2	44.6	0.4	Moderate adverse	Negligible	N/A
2-95	48.0	41.6	42.8	1.2	Moderate adverse	Slight adverse	N/A
2-96	52.0	44.0	44.4	0.3	Moderate adverse	Negligible	N/A
2-97	52.7	44.5	44.7	0.2	Moderate adverse	Negligible	N/A
2-98	45.5	39.1	39.6	0.5	Slight adverse	Slight adverse	N/A
2-99	48.1	41.5	42.5	1.0	Moderate adverse	Slight adverse	N/A
2-100	54.2	45.0	45.6	0.6	Substantial adverse	Slight adverse	N/A
2-101	74.8	60.8	60.9	0.1	Negligible	Negligible	N/A
2-102	64.6	53.7	55.0	1.3	Substantial adverse	Slight adverse	N/A
2-103	70.5	58.4	59.6	1.3	Substantial adverse	Slight adverse	N/A

Table 6 : Summary of annual mean PM10 results (Stage A construction phase)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-1	27.6	24.9	25.0	0.1	Negligible	Negligible	Negligible
2-8	27.0	24.8	24.9	0.1	Negligible	Negligible	Negligible
2-9	27.8	25.1	25.2	0.1	Negligible	Negligible	Negligible
2-17	25.3	23.6	23.6	0.0	Negligible	Negligible	N/A
2-25	28.3	25.7	25.8	0.1	Negligible	Negligible	N/A
2-38	30.1	26.9	26.9	0.1	Negligible	Negligible	N/A
2-50	26.0	24.0	24.1	0.1	Negligible	Negligible	Negligible
2-51	26.5	24.4	24.6	0.2	Negligible	Negligible	Negligible
2-52	26.3	24.3	24.4	0.1	Negligible	Negligible	Negligible
2-53	26.9	24.8	24.9	0.2	Negligible	Negligible	Negligible
2-54	26.1	24.0	24.1	0.1	Negligible	Negligible	Negligible
2-55	26.4	24.2	24.3	0.1	Negligible	Negligible	Negligible
2-56	25.5	23.5	23.5	0.0	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-57	25.5	23.5	23.5	0.0	Negligible	Negligible	Negligible
2-58	26.0	23.8	23.8	0.0	Negligible	Negligible	Negligible
2-59	26.2	24.0	24.0	0.1	Negligible	Negligible	Negligible
2-61	27.1	24.5	24.6	0.1	Negligible	Negligible	Negligible
2-63	26.2	23.9	23.9	0.0	Negligible	Negligible	Negligible
2-64	27.1	24.5	24.6	0.1	Negligible	Negligible	Negligible
2-65	26.8	24.6	24.7	0.1	Negligible	Negligible	Negligible
2-66	26.8	24.5	24.6	0.1	Negligible	Negligible	Negligible
2-67	27.5	24.7	24.8	0.1	Negligible	Negligible	Negligible
2-68	28.7	25.6	25.7	0.1	Negligible	Negligible	Negligible
2-69	28.5	26.0	26.1	0.1	Negligible	Negligible	Negligible
2-70	27.1	24.6	24.7	0.0	Negligible	Negligible	Negligible
2-71	28.9	26.4	26.5	0.1	Negligible	Negligible	Negligible
2-72	28.2	25.8	25.8	0.0	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-73	28.3	25.9	26.0	0.1	Negligible	Negligible	Negligible
2-74	27.2	24.7	24.7	0.0	Negligible	Negligible	Negligible
2-79	27.6	25.3	25.4	0.0	Negligible	Negligible	Negligible
2-80	26.8	24.7	24.8	0.0	Negligible	Negligible	Negligible
2-81	26.7	24.7	24.7	0.0	Negligible	Negligible	Negligible
2-82	26.4	24.3	24.3	0.0	Negligible	Negligible	Negligible
2-83	25.0	23.3	23.4	0.1	Negligible	Negligible	N/A
2-84	24.6	22.9	23.1	0.1	Negligible	Negligible	N/A
2-85	27.2	24.9	25.1	0.2	Negligible	Negligible	N/A
2-86	25.5	23.6	23.8	0.2	Negligible	Negligible	N/A
2-87	26.4	24.2	24.4	0.2	Negligible	Negligible	N/A
2-88	25.7	23.7	24.0	0.2	Negligible	Negligible	N/A
2-89	27.6	25.0	25.3	0.2	Negligible	Negligible	N/A
2-90	30.3	27.3	27.3	0.0	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-91	29.7	27.0	27.0	0.0	Negligible	Negligible	N/A
2-92	26.0	24.2	24.3	0.1	Negligible	Negligible	N/A
2-93	24.9	23.3	23.4	0.1	Negligible	Negligible	N/A
2-94	26.3	24.3	24.4	0.0	Negligible	Negligible	N/A
2-95	24.9	23.2	23.4	0.2	Negligible	Negligible	N/A
2-96	25.3	23.5	23.6	0.0	Negligible	Negligible	N/A
2-97	25.4	23.5	23.6	0.0	Negligible	Negligible	N/A
2-98	24.5	22.8	22.9	0.1	Negligible	Negligible	N/A
2-99	24.9	23.2	23.3	0.2	Negligible	Negligible	N/A
2-100	25.6	23.7	23.8	0.1	Negligible	Negligible	N/A
2-101	28.8	26.0	26.0	0.0	Negligible	Negligible	N/A
2-102	27.5	25.2	25.4	0.3	Negligible	Negligible	N/A
2-103	28.3	25.7	26.0	0.3	Negligible	Negligible	N/A

Table 7 : Summary of 24-hour mean PM10 results (Stage A construction phase)

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-1	19	12	12	0	Negligible	Negligible	Negligible
2-8	18	12	12	0	Negligible	Negligible	Negligible
2-9	20	13	13	0	Negligible	Negligible	Negligible
2-17	13	9	9	0	Negligible	Negligible	N/A
2-25	22	14	14	0	Negligible	Negligible	N/A
2-38	28	17	17	0	Negligible	Negligible	N/A
2-50	15	10	10	0	Negligible	Negligible	Negligible
2-51	16	11	11	0	Negligible	Negligible	Negligible
2-52	16	11	11	0	Negligible	Negligible	Negligible
2-53	17	12	12	0	Negligible	Negligible	Negligible
2-54	15	10	10	0	Negligible	Negligible	Negligible
2-55	16	11	11	0	Negligible	Negligible	Negligible
2-56	14	9	9	0	Negligible	Negligible	Negligible

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-57	14	9	9	0	Negligible	Negligible	Negligible
2-58	15	10	10	0	Negligible	Negligible	Negligible
2-59	16	10	10	0	Negligible	Negligible	Negligible
2-61	18	11	11	0	Negligible	Negligible	Negligible
2-63	15	10	10	0	Negligible	Negligible	Negligible
2-64	18	11	11	0	Negligible	Negligible	Negligible
2-65	17	11	12	0	Negligible	Negligible	Negligible
2-66	17	11	11	0	Negligible	Negligible	Negligible
2-67	19	12	12	0	Negligible	Negligible	Negligible
2-68	23	14	14	0	Negligible	Negligible	Negligible
2-69	22	15	15	0	Negligible	Negligible	Negligible
2-70	18	12	12	0	Negligible	Negligible	Negligible
2-71	24	16	16	0	Negligible	Negligible	Negligible
2-72	21	14	14	0	Negligible	Negligible	Negligible

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-73	22	15	15	0	Negligible	Negligible	Negligible
2-74	18	12	12	0	Negligible	Negligible	Negligible
2-79	19	13	13	0	Negligible	Negligible	Negligible
2-80	17	12	12	0	Negligible	Negligible	Negligible
2-81	17	12	12	0	Negligible	Negligible	Negligible
2-82	16	11	11	0	Negligible	Negligible	Negligible
2-83	12	9	9	0	Negligible	Negligible	N/A
2-84	11	8	8	0	Negligible	Negligible	N/A
2-85	18	12	13	1	Negligible	Negligible	N/A
2-86	14	9	10	0	Negligible	Negligible	N/A
2-87	16	11	11	0	Negligible	Negligible	N/A
2-88	14	10	10	1	Negligible	Negligible	N/A
2-89	19	12	13	1	Negligible	Negligible	N/A
2-90	29	19	19	0	Negligible	Negligible	N/A

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-91	26	18	18	0	Negligible	Negligible	N/A
2-92	15	11	11	0	Negligible	Negligible	N/A
2-93	12	9	9	0	Negligible	Negligible	N/A
2-94	16	11	11	0	Negligible	Negligible	N/A
2-95	12	9	9	0	Negligible	Negligible	N/A
2-96	13	9	9	0	Negligible	Negligible	N/A
2-97	13	9	9	0	Negligible	Negligible	N/A
2-98	11	8	8	0	Negligible	Negligible	N/A
2-99	12	8	9	0	Negligible	Negligible	N/A
2-100	14	10	10	0	Negligible	Negligible	N/A
2-101	23	15	15	0	Negligible	Negligible	N/A
2-102	19	13	13	1	Negligible	Negligible	N/A
2-103	22	14	15	1	Negligible	Negligible	N/A

2.3.7 As detailed in paragraph 2.3.2, three peak construction scenarios were used in the assessment of the stage A construction. The following tables provide a comparison of the resulting impact descriptors across these scenarios.

Table 8 : Comparison of annual mean NO_2 results across peak construction scenarios (Stage A construction phase)

Receptor	**Annual mean NO_2 results**		
	Test 1 impact descriptor	**Test 2 impact descriptor**	**Test 3 impact descriptor**
2-1	Negligible	Moderate beneficial	Moderate adverse
2-8	Substantial adverse	Moderate adverse	Substantial beneficial
2-9	Negligible	Moderate beneficial	Negligible
2-17	Moderate adverse	Negligible	Substantial beneficial
2-25	Negligible	Moderate beneficial	Moderate adverse
2-38	Moderate beneficial	Substantial beneficial	Moderate adverse
2-50	Substantial adverse	Moderate adverse	Substantial beneficial
2-51	Substantial adverse	Moderate adverse	Substantial beneficial
2-52	Substantial adverse	Moderate adverse	Moderate beneficial
2-53	Substantial adverse	Moderate adverse	Substantial beneficial
2-54	Substantial adverse	Negligible	Substantial beneficial
2-55	Substantial adverse	Negligible	Substantial beneficial
2-56	Moderate adverse	Negligible	Substantial beneficial
2-57	Moderate adverse	Negligible	Substantial beneficial
2-58	Negligible	Moderate beneficial	Moderate beneficial
2-59	Moderate adverse	Negligible	Substantial beneficial
2-61	Moderate adverse	Negligible	Moderate beneficial
2-63	Negligible	Negligible	Moderate beneficial
2-64	Moderate adverse	Negligible	Substantial beneficial
2-65	Moderate adverse	Moderate adverse	Negligible
2-66	Negligible	Negligible	Negligible

Receptor	Annual mean NO2 results		
2-67	Moderate beneficial	Substantial beneficial	Substantial adverse
2-68	Substantial beneficial	Substantial beneficial	Substantial adverse
2-69	Negligible	Negligible	Moderate adverse
2-70	Moderate beneficial	Moderate beneficial	Moderate adverse
2-71	Negligible	Negligible	Moderate adverse
2-72	Moderate beneficial	Negligible	Moderate adverse
2-73	Negligible	Negligible	Negligible
2-74	Substantial beneficial	Substantial beneficial	Moderate adverse
2-79	Moderate adverse	Negligible	Substantial beneficial
2-80	Moderate adverse	Negligible	Substantial beneficial
2-81	Negligible	Moderate beneficial	Substantial beneficial
2-82	Negligible	Moderate beneficial	Substantial beneficial
2-83	Moderate adverse	Negligible	Moderate adverse
2-84	Slight adverse	Slight adverse	Moderate adverse
2-85	Substantial adverse	Moderate beneficial	Substantial adverse
2-86	Moderate beneficial	Substantial adverse	Substantial adverse
2-87	Substantial beneficial	Substantial beneficial	Substantial adverse
2-88	Negligible	Substantial adverse	Substantial adverse
2-89	Negligible	Substantial beneficial	Substantial adverse
2-90	Negligible	Moderate beneficial	Negligible
2-91	Negligible	Moderate adverse	Moderate adverse
2-92	Substantial adverse	Moderate adverse	Substantial beneficial
2-93	Moderate adverse	Moderate adverse	Moderate beneficial
2-94	Negligible	Negligible	Moderate adverse

Receptor	Annual mean NO2 results		
2-95	Moderate adverse	Moderate adverse	Moderate adverse
2-96	Moderate adverse	Moderate adverse	Substantial beneficial
2-97	Moderate adverse	Negligible	Moderate beneficial
2-98	Slight adverse	Negligible	Slight adverse
2-99	Moderate adverse	Moderate adverse	Moderate adverse
2-100	Substantial adverse	Negligible	Substantial adverse
2-101	Negligible	Negligible	Substantial beneficial
2-102	Substantial adverse	Substantial beneficial	Substantial adverse
2-103	Negligible	Substantial beneficial	Substantial adverse

Table 9 : Comparison of annual mean PM10 results across peak construction scenarios (Stage A construction phase)

Receptor	Annual mean PM10 results		
	Test 1 impact descriptor	Test 2 impact descriptor	Test 3 impact descriptor
2-1	Negligible	Negligible	Negligible
2-8	Negligible	Negligible	Negligible
2-9	Negligible	Negligible	Negligible
2-17	Negligible	Negligible	Negligible
2-25	Negligible	Negligible	Negligible
2-38	Negligible	Negligible	Negligible
2-50	Negligible	Negligible	Negligible
2-51	Negligible	Negligible	Negligible
2-52	Negligible	Negligible	Negligible
2-53	Negligible	Negligible	Negligible
2-54	Negligible	Negligible	Negligible
2-55	Negligible	Negligible	Negligible
2-56	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
2-57	Negligible	Negligible	Negligible
2-58	Negligible	Negligible	Negligible
2-59	Negligible	Negligible	Negligible
2-61	Negligible	Negligible	Negligible
2-63	Negligible	Negligible	Negligible
2-64	Negligible	Negligible	Negligible
2-65	Negligible	Negligible	Negligible
2-66	Negligible	Negligible	Negligible
2-67	Negligible	Negligible	Negligible
2-68	Negligible	Negligible	Negligible
2-69	Negligible	Negligible	Negligible
2-70	Negligible	Negligible	Negligible
2-71	Negligible	Negligible	Negligible
2-72	Negligible	Negligible	Negligible
2-73	Negligible	Negligible	Negligible
2-74	Negligible	Negligible	Negligible
2-79	Negligible	Negligible	Negligible
2-80	Negligible	Negligible	Negligible
2-81	Negligible	Negligible	Negligible
2-82	Negligible	Negligible	Negligible
2-83	Negligible	Negligible	Negligible
2-84	Negligible	Negligible	Negligible
2-85	Negligible	Negligible	Negligible
2-86	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
2-87	Negligible	Negligible	Negligible
2-88	Negligible	Negligible	Negligible
2-89	Negligible	Negligible	Negligible
2-90	Negligible	Negligible	Negligible
2-91	Negligible	Negligible	Negligible
2-92	Negligible	Negligible	Negligible
2-93	Negligible	Negligible	Negligible
2-94	Negligible	Negligible	Negligible
2-95	Negligible	Negligible	Negligible
2-96	Negligible	Negligible	Negligible
2-97	Negligible	Negligible	Negligible
2-98	Negligible	Negligible	Negligible
2-99	Negligible	Negligible	Negligible
2-100	Negligible	Negligible	Negligible
2-101	Negligible	Negligible	Negligible
2-102	Negligible	Negligible	Negligible
2-103	Negligible	Negligible	Negligible

Assessment of significance

2.3.8 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES. Air quality management areas (AQMA) cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.3.9 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the revised scheme. Many receptor locations will also experience an increase in concentrations of NO2 and PM10 with the revised scheme. The impacts for some of the assessed receptors will be moderate or substantial adverse for NO2 using the revised assessment methodology and there will be new significant effects as a result. No significant effects for PM10 are reported.

2.3.10 The construction vehicle flows at peak periods and consequential changes to general traffic flows in CFA2 will give rise to new significant effects for NO2 at many of the assessed receptors.

2.3.11 Overall, given the factors above, air quality effects are considered to be significant, although limited in spatial extent to locations close to affected roads.

2.4 Stage B1 construction and operation (2026-2033)

2.4.1 Operation traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

2.4.2 One peak traffic scenario has been assessed during the Stage B1 combined construction and operational period. Its assessment assumes 2026 vehicle emission rates and 2026 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in the stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. This scenario has been assessed against the future baseline case without the revised scheme.

Receptors assessed

2.4.3 The receptor assessed is listed in Table 10.

Table 10 : Modelled receptors (Stage B1 construction and operation)

Receptor	Description/location	Ordnance Survey (OS) coordinates
2-104	15 Crinan Street	530369, 183400

Background concentrations

2.4.4 The background concentrations used in the assessment are shown in Table 11 and taken from the Defra maps.

Table 11 : Background 2012and 2026 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(2-104) 15 Crinan Street	68.1	40.4	25.0	40.4	26.1	22.3

Detailed modelling results

2.4.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptor and the resulting impact descriptor following the latest IAQM/EPUK guidance (Tables 12 – 14). As a comparison, the impact descriptor using the previous EPUK guidance has also been provided along with what was reported in the main ES. Results presented correspond to the greatest impact at each receptor from the peak construction year assessed.

Table 12 : Summary of annual mean NO_2 results (Stage B1 construction and operation)

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
2-104	51.6	29.9	30.0	0.1	Negligible	Negligible	N/A

Table 13 : Summary of annual mean PM10 results (Stage B1 construction and operation)

Receptor	PM10 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Construction without scheme	Construction with scheme				
2-104	26.2	23.0	23.0	0.0	Negligible	Negligible	N/A

Table 14 : Summary of 24-hour mean PM10 results (Stage B1 construction and operation)

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Construction without scheme	Construction with scheme				
2-104	15	8	8	0	Negligible	Negligible	N/A

Assessment of significance

2.4.6 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES. AQMAs cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.4.7 The assessment predicted that there will be no locations where air quality standards are exceeded with or without the revised scheme and that any impact will be negligible.

2.4.8 Overall, air quality effects are not considered to be significant.

3 References

Moorcroft & Barrowcliffe et al, (2015), *Land-Use Planning & Development Control: Planning for Air Quality*, London: Institute of Air Quality Management

Department for Environment, Food and Rural Affairs (Defra), (2011), Defra background maps 2011; http://laqm.defra.gov.uk/maps/maps2010.html; Accessed: September 2014.

Department for Environment, Food and Rural Affairs, (2009), Technical Guidance Note LAQM TG(09)

Department of Food Environment and Rural Affairs, (2007), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Her Majesty's Stationery Office

Environment Agency, What's in your Backyard?; http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

Environmental Protection UK, (2010), Development Control: Planning for Air Quality (2010). Greater London Authority (GLA) (2011) The London Plan: Spatial Development Strategy for Greater London, GLA, London.

Greater London Authority, (2010), Clearing the Air: The Mayor's Air Quality Strategy, GLA, London.

Greater London Authority, (2010), London Atmospheric Emissions Inventory 2008 Concentration Maps; http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.

Greater London Authority, (2010), Draft Climate Change Adaptation Strategy for London, GLA, London.

Greater London Authority, (2006), Sustainable Design and Construction: The London Plan Supplementary Planning Guidance, GLA, London.

Highways Agency, (2007), The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07.

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 2 and Additional Provision 3 Environmental Statement

Volume 5 | Technical appendices

Air quality

AQ-001-003

Environmental topic:	Air quality	AQ
Appendix name:	Data appendix	001
Community forum area:	Primrose Hill to Kilburn (Camden)	003

Contents

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1 Introduction

1.1 Structure of this air quality assessment appendix

1.1.1 This appendix provides an update to Appendix AQ-001-003 of the main Environmental Statement (ES) (Volume 5, Appendix AQ-001-003). This update should be read in conjunction with Appendix AQ-001-003 of the main ES.

1.1.2 This appendix is structured as follows: air quality assessment - road traffic (Section 2).

1.1.3 Maps referred to throughout this air quality appendix are contained in the Volume 5 Air Quality Map Book, within this Supplementary Environmental Statement 2 (SES2) and Additional Provision 3 ES (AP3 ES).

1.2 Scope of this assessment

1.2.1 This air quality assessment considers changes to local air quality as a result of:

- changes to the design or construction assumptions which do not require changes to the Bill;
- changes to the design of the scheme that are outside the existing limits of the Bill (i.e. AP3 amendments); and
- updates to traffic models.

Methodology, data sources and design criteria

1.2.2 The assessment scope, key assumptions and limitations for air quality are set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES.

2 Air quality assessment - road traffic

2.1 Overall assessment approach

2.1.1 The overall assessment approach remains the same as described in Appendix AQ-001-003 of the main ES. Where changes to this approach have been employed, these are detailed in Section 2.2.

2.1.2 As detailed in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, since the publication of the main ES, the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have issued new guidance[1] on assessing the impact of traffic emissions, which introduces a new set of impact descriptors. The 2015 IAQM/EPUK guidance differs from the previous 2010 guidance[2], which was used in the main ES, in that it treats a similar increase in ambient pollution concentrations as having a greater impact, and therefore more likely to have a significant effect. Where applicable, a comparison has been provided in the results tables between the new impact descriptors, those that would arise if the previous guidance was used and what was reported in the main ES.

2.2 Model inputs and verification

Model parameters for detailed assessment

2.2.1 The ADMS-Roads model was used for the detailed assessment. A surface roughness length of 1.5m, meteorological site surface roughness length of 0.2m, minimum Monin-Obukhov length of 100m and latitude of 51.5 degrees were used in the detailed assessment. All other model parameters were model default settings. Meteorological data from the London Heathrow monitoring site was used.

Model verification

2.2.2 Since the model predicts NOx contributions for the modelled roads, this was initially compared to the NOx road contribution derived from NOx concentrations (where available) measured at monitoring sites and Department of Environment, Food and Rural Affairs (Defra) background maps.

2.2.3 Roadside monitoring sites were chosen from across the traffic model area, which extends both west and north of the study area. This allowed a greater number of sites to be included in the verification. Sites where nearby busy roads were not included in the traffic model data set (and which, therefore, could not be modelled correctly as roadside sites with the traffic data set) were excluded from assessment. The results of this comparison are shown in Table 1.

[1] Moorcroft and Barrowcliffe et al, (2015) Land-Use Planning and Development Control: Planning for Air Quality, London: Institute of Air Quality Management.
[2] EPUK, (2010), Development Control: Planning for Air Quality.

Table 1 : Comparison of monitored and modelled NOx concentrations for verification

Site	Monitored total NO2 (µg/m^3)	Monitored total NOx (µg/m^3)	Background NO2 (µg/m^3)	Background NOx (µg/m^3)	Monitored road NOx (µg/m^3)	Modelled road NOx (µg/m^3)
London Borough of Camden (LBC) - Euston Road (Automatic Urban and Rural Network (AURN))	106.1	350.0	47.8	84.3	58.3	265.7
LBC - Shaftesbury Avenue (AURN)	71.2	163.0	53.7	97.0	17.5	66.0
LBC - Euston Road	82.1	N/A	47.8	83.7	34.3	110.0
LBC - Kentish Town Road	59.0	N/A	33.9	55.5	25.1	67.7
LBC - 47 Fitzjohn's Avenue	61.2	N/A	32.5	52.7	28.7	79.0
LBC - Bloomsbury Street	71.6	N/A	51.0	92.6	20.6	61.2
LBC - Camden Road	67.4	N/A	37.1	62.2	30.3	87.4
LBC - Chetwynd Road	43.7	N/A	31.7	51.3	12.0	28.4
LBC - Mill Lane/ West End Lane	52.0	N/A	32.4	52.6	19.6	49.9
LBC - Swiss Cottage	72.7	N/A	37.4	62.9	35.3	106.1

2.2.4 The calculated model adjustment factor for the road contribution of NOx was 2.19. This factor is the gradient of the straight line function obtained by plotting the modelled NOx concentrations versus the (unadjusted) monitored NOx concentrations. This was applied to all NOx results from the ADMS-Roads modelling. This is line with Defra guidance[3] on model verification.

2.2.5 A final check was then made to compare the total NO2 concentrations from the modelling to the monitored data. This is shown Table 2.

[3] Department for Environment, Food and Rural Affairs (2009) Technical Guidance Note LAQM TG(09).

Table 2 : Comparison of monitored and modelled annual average NO_2 concentrations

Site	Monitored concentration (µg/m^3)	Modelled concentration (µg/m^3)	Difference ((modelled - monitored)/monitored) x 100
LBC - Euston Road (AURN)	106.1	82.8	-21.9%
LBC - Shaftesbury Avenue (AURN)	71.2	70.9	-0.5%
LBC - Euston Road	82.1	95.3	16.1%
LBC - Kentish Town Road	59.0	61.4	4.2%
LBC - 47 Fitzjohn's Avenue	61.2	38.5	-37.2%
LBC - Bloomsbury Street	71.6	85.8	19.8%
LBC - Camden Road	67.4	71.2	5.6%
LBC - Chetwynd Road	43.7	39.2	-10.2%
LBC - Mill Lane/ West End Lane	52.0	49.4	-5.2%
LBC - Swiss Cottage	72.7	77.5	6.7%

2.2.6 As there was no consistent under- or over-prediction and the majority of modelled NO_2 concentrations were within 25% of the monitored concentrations, no further adjustment was undertaken.

2.3 Stage A construction (2017-2026)

2.3.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

2.3.2 Three peak construction traffic scenarios, described in Volume 2 Section 3.9, have been assessed during the Stage A period. Although the three scenarios assessed occur in different years, their assessment assumes a pessimistic approach, with 2017 vehicle emission rates and 2017 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in the stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. These scenarios have been assessed against the relevant future baseline cases without the AP3 revised scheme.

Receptors assessed

2.3.3 Receptors assessed are listed in Table 3.

Table 3 : Modelled receptors (Stage A construction phase)

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-1	Farjeon House, Hilgrove Road	526621, 184131
3-5	40 Brent Park Road	522704, 187555
3-6	169 Cricklewood Lane	524635, 186283
3-8	98 Finchley Road	526663, 184252
3-9	23 College Crescent	526648, 184408
3-13	Canfield House, Canfield Gardens	526305, 184681
3-16	1 Adelaide Road	528173, 184390
3-21	71 Avenue Road, Camden	526968, 183808
3-26	Arkwright Mansions, 1-10 Arkwright Road	526055, 185107
3-28	465 Finchley Road	525649, 185339
3-32	284 Cricklewood Lane	524650, 186252
3-37	Regency Lodge, Adelaide Road	526744, 184138
3-40	48 Chalk Farm Road	528469, 184298
3-41	Stanbury Court, Haverstock Hill	527688, 184761
3-43	Apsley House, 23-29 Finchley Road	526585, 183456
3-49	1 Prince Albert Road	528605, 183577
3-50	16a Finchley Road	526623, 183472
3-51	14 Finchley Road	526629, 183459
3-52	Balmoral Court, 20 Queens Terrace	526651, 183426
3-53	1 Finchley Road	526697, 183310
3-54	Birley Lodge, 63 Acacia Road	526764, 183280
3-55	68 Queens Grove	526571, 183510
3-56	56 The Marlowes	526613, 183678

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-57	8 The Marlowes	526628, 183841
3-58	16 The Marlowes	526625, 183815
3-59	38 The Marlowes	526619, 183749
3-60	Jevons House, Alexandra Road	526613, 184087
3-61	1 Court Close, St. Johns Wood Park	526654, 184124
3-62	1 Court Close, St. Johns Wood Park	526670, 184091
3-63	115 Finchley Road	526631, 184239
3-64	Northways, College Crescent	526630, 184401
3-65	Swiss Cottage Post Office	526462, 184504
3-66	17-18 New College Parade	526472, 184532
3-67	6 Fairfax Mansions, Finchley Road	526445, 184514
3-69	219c Finchley Road	526307, 184687
3-70	3 Sumpter Close	526330, 184701
3-71	150a Finchley Road	526247, 184838
3-72	132 Finchley Road	526282, 184780
3-73	Midland Court, Finchley Road	526228, 184875
3-74	291 Finchley Road	526162, 184957
3-75	166a Finchley Road	526180, 184981
3-76	Arkwright Mansions, Finchley Road	526070, 185093
3-77	333-339 Finchley Road	526011, 185109
3-78	Hatstone Court, 335 Finchley Road	526055, 185071
3-79	192 Finchley Road	526128, 185036
3-80	Langland Mansions, 228 Finchley Road	525923, 185238

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-81	Dunrobin Court, 389 Finchley Road	525863, 185243
3-82	Alvanley Court, Finchley Road	525758, 185318
3-83	463a Finchley Road	525670, 185322
3-84	Unit 5-6, Palace Court, 250 Finchley Road	525698, 185340
3-85	St. Andrews Church Hall, Frognal Lane	525673, 185354
3-86	Avenue Mansions, Finchley Road	525521, 185446
3-87	Avenue Mansions, Finchley Road	525486, 185478
3-88	Avenue Mansions, Finchley Road	525501, 185465
3-89	38 Heath Drive	525543, 185480
3-90	529a Finchley Road	525312, 185624
3-91	Apartment 4, Westfield Lodge, 302 Finchley Road	525335, 185647
3-92	553 Finchley Road	525198, 185757
3-93	326 Finchley Road	525220, 185778
3-94	348 Finchley Road	525148, 185965
3-95	589a-589b Finchley Road	525141, 185895
3-96	364 Finchley Road	525102, 186050
3-97	360 Finchley Road	525108, 186029
3-98	Vernon Court, Hendon Way	524976, 186035
3-99	Greenbanks, Lyndale	524920, 186065
3-100	Hi-Lo, Hocroft Walk, Hendon Way	524792, 186170
3-101	24 Hocroft Avenue	524699, 186163
3-102	56 Hendon Way	524599, 186367
3-103	49 Hendon Way	524522, 186439

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-104	90 Hendon Way	524520, 186580
3-129	5 Englands Lane	527648, 184710
3-130	Flat A, 2 Primrose Gardens	527554, 184634
3-131	57 Englands Lane	527500, 184550
3-132	62d Haverstock Hill	527988, 184584
3-133	83a-85a Haverstock Hill	527803, 184687
3-134	92 Haverstock Hill	527838, 184692
3-135	18b-18f Haverstock Hill	528162, 184428
3-136	24 Haverstock Hill	528067, 184505
3-147	5 Prince Albert Road	528491, 183645
3-148	Pallester Court, Wayside	524259, 187210
3-151	36 Chalk Farm Road	528524, 184282
3-153	2 Fleet Road	527775, 185419
3-156	6 Albert Terrace	528067, 183763
3-159	Ludham, Lismore Circus	527842, 185352
3-160	1 Gloucester Avenue	528635, 183611
3-163	2 The Marlowes	526630, 183863
3-169	Rackstraw House, 40 Primrose Hill Road	527526, 184367
3-171	65 Quickswood	527496, 184324
3-180	68 Queens Grove	526598, 183540
3-181	617 Finchley Road	525054, 186028
3-183	101 Dallas Road	522576, 187644
3-185	Primrose Hill Lodge, Prince Albert Road	527757, 183556

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-186	21 Prince Albert Road	528138, 183685
3-187	26 Regents Park Road	528336, 183762
3-188	3 St Mark's Square	528197, 183742
3-189	2 Malden Road	528334, 184636
3-190	60 Malden Road	528239, 184842
3-191	2 Malden Place	528032, 185129
3-192	26 Meadowbank	527709, 183995
3-193	116 Regent's Park Road	527886, 183981
3-194	Elsworthy Court, Elsworthy Road	527542, 184171
3-195	106 The Vale	524393, 186815
3-196	75 Ridge Hill	524232, 187254
3-197	63 Malcolm Crescent	522169, 188515
3-198	1 Elliott Square	527254, 184272
3-199	25 Elsworthy Road	527297, 184016
3-200	Holyrood Court, 3-5 Gloucester Avenue	528613, 183638
3-201	16 Prince Albert Road	528199, 183701
3-202	St Paul's Church of England (CE) Primary School, Elsworthy Road	527492, 184132
3-203	113 The Vale	5243810, 186844
3-204	149 Hendon Way	524295, 187037
3-205	Wessex Gardens Primary School	524152, 187371
3-206	107 The Vale	524409, 186880
3-207	100 The Vale	524424, 186841
3-208	28 Brocas Close	527283, 184317

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-209	112 Haverstock Hill	527724, 184782
3-210	110 Haverstock Hill	527742, 184768
3-211	Beaumont Walk, Adelaide Road	527822, 184390
3-212	Whitton, 89 King Henrys Road	527566, 184196
3-213	Flats 6-12, 38 Primrose Hill Road	527546, 184219
3-214	Wendling, Southampton Road	527869, 185279
3-215	4 Mansfield Road	527793, 185431
3-216	60 Regent's Park Road	528055, 183806
3-217	5-8 St Mark's Square	528229, 183774
3-218	4 St Mark's Square	528201, 183775
3-219	25 Queen's Grove	526792, 183659
3-220	26 St John's Wood Park	526754, 183668
3-221	Rossetti House, 59 Ordnance Hill	526774, 183646
3-222	56 Avenue Road, Camden	526968, 183867
3-223	75 Avenue Road, Camden	526935, 183836
3-224	Middlefield, Boundary Road	526624, 183891
3-225	62 Elsworthy Road	527094, 183922
3-226	55 Elsworthy Road	527065, 183904
3-227	176 Hendon Way	523918, 187689
3-228	17 Hornby Close, Adelaide Road	526966, 184233
3-E	Brent Reservoir (ecological receptor)	522407, 187444

Background concentrations

2.3.4 The background concentrations used in the assessment are shown in Table 4, taken from the Defra maps.

Table 4 : Background 2012 and 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-1) Farjeon House, Hilgrove Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-5) 40 Brent Park Road	66.7	38.7	25.0	55.4	33.3	23.2
(3-6) 169 Cricklewood Lane	50.6	30.9	22.9	42.2	26.7	21.5
(3-8) 98 Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-9) 23 College Crescent	62.9	37.4	24.1	53.5	32.5	22.6
(3-13) Canfield House, Canfield Gardens	62.9	37.4	24.1	53.5	32.5	22.6
(3-16) 1 Adelaide Road	58.4	35.2	23.7	49.2	30.5	22.2
(3-21) 71 Avenue Road, Camden	60.8	36.4	23.6	51.4	31.6	22.1
(3-26) Arkwright Mansions, 1-10 Arkwright Road	52.7	32.5	22.6	44.6	28.2	21.1
(3-28) 465 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-32) 284 Cricklewood Lane	50.6	30.9	22.9	42.2	26.7	21.5
(3-37) Regency Lodge, Adelaide Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-40) 48 Chalk Farm Road	58.4	35.2	23.7	49.2	30.5	22.2
(3-41) Stanbury Court, Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-43) Apsley House, 23-29 Finchley Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-49) 1 Prince Albert Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-50) 16a Finchley Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-51) 14 Finchley Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-52) Balmoral Court, 20 Queens Terrace	60.8	36.4	23.6	51.4	31.6	22.1
(3-53) 1 Finchley Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-54) Birley Lodge, 63 Acacia Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-55) 68 Queens Grove	60.8	36.4	23.6	51.4	31.6	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-56) 56 The Marlowes	60.8	36.4	23.6	51.4	31.6	22.1
(3-57) 8 The Marlowes	60.8	36.4	23.6	51.4	31.6	22.1
(3-58) 16 The Marlowes	60.8	36.4	23.6	51.4	31.6	22.1
(3-59) 38 The Marlowes	60.8	36.4	23.6	51.4	31.6	22.1
(3-60) Jevons House, Alexandra Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-61) 1 Court Close, St. Johns Wood Park	62.9	37.4	24.1	53.5	32.5	22.6
(3-62) 1 Court Close, St. Johns Wood Park	62.9	37.4	24.1	53.5	32.5	22.6
(3-63) 115 Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-64) Northways, College Crescent	62.9	37.4	24.1	53.5	32.5	22.6
(3-65) Swiss Cottage Post Office	62.9	37.4	24.1	53.5	32.5	22.6
(3-66) 17-18 New College Parade	62.9	37.4	24.1	53.5	32.5	22.6
(3-67) 6 Fairfax Mansions, Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-69) 219c Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-70) 3 Sumpter Close	62.9	37.4	24.1	53.5	32.5	22.6
(3-71) 150a Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-72) 132 Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-73) Midland Court, Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-74) 291 Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-75) 166a Finchley Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-76) Arkwright Mansions, Finchley Road	52.7	32.5	22.6	44.6	28.2	21.1
(3-77) 333-339 Finchley Road	52.7	32.5	22.6	44.6	28.2	21.1
(3-78) Hatstone Court, 335 Finchley Road	52.7	32.5	22.6	44.6	28.2	21.1
(3-79) 192 Finchley Road	52.7	32.5	22.6	44.6	28.2	21.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-80) Langland Mansions, 228 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-81) Dunrobin Court, 389 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-82) Alvanley Court, Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-83) 463a Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-84) Unit 5-6, Palace Court, 250 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-85) St. Andrews Church Hall, Frognal Lane	52.6	32.4	22.9	44.4	28.0	21.5
(3-86) Avenue Mansions, Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-87) Avenue Mansions, Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-88) Avenue Mansions, Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-89) 38 Heath Drive	52.6	32.4	22.9	44.4	28.0	21.5
(3-90) 529a Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-91) Apartment 4, Westfield Lodge, 302 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-92) 553 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-93) 326 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-94) 348 Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-95) 589a-589b Finchley Road	52.6	32.4	22.9	44.4	28.0	21.5
(3-96) 364 Finchley Road	47.2	29.2	21.9	39.5	25.2	20.6
(3-97) 360 Finchley Road	47.2	29.2	21.9	39.5	25.2	20.6
(3-98) Vernon Court, Hendon Way	50.6	30.9	22.9	42.2	26.7	21.5
(3-99) Greenbanks, Lyndale	50.6	30.9	22.9	42.2	26.7	21.5
(3-100) Hi-Lo, Hocroft Walk, Hendon Way	50.6	30.9	22.9	42.2	26.7	21.5
(3-101) 24 Hocroft Avenue	50.6	30.9	22.9	42.2	26.7	21.5
(3-102) 56 Hendon Way	50.6	30.9	22.9	42.2	26.7	21.5

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-103) 49 Hendon Way	50.6	30.9	22.9	42.2	26.7	21.5
(3-104) 90 Hendon Way	50.6	30.9	22.9	42.2	26.7	21.5
(3-129) 5 Englands Lane	54.2	33.2	22.8	45.8	28.8	21.4
(3-130) Flat A, 2 Primrose Gardens	54.2	33.2	22.8	45.8	28.8	21.4
(3-131) 57 Englands Lane	54.2	33.2	22.8	45.8	28.8	21.4
(3-132) 62d Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-133) 83a-85a Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-134) 92 Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-135) 18b-18f Haverstock Hill	58.4	35.2	23.7	49.2	30.5	22.2
(3-136) 24 Haverstock Hill	58.4	35.2	23.7	49.2	30.5	22.2
(3-147) 5 Prince Albert Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-148) Pallester Court, Wayside	51.9	31.6	23.0	43.2	27.2	21.6
(3-151) 36 Chalk Farm Road	58.4	35.2	23.7	49.2	30.5	22.2
(3-153) 2 Fleet Road	52.3	32.2	22.4	44.3	28.0	21.0
(3-156) 6 Albert Terrace	59.9	36.1	23.7	50.6	31.2	22.1
(3-159) Ludham, Lismore Circus	52.3	32.2	22.4	44.3	28.0	21.0
(3-160) 1 Gloucester Avenue	59.9	36.1	23.7	50.6	31.2	22.1
(3-163) 2 The Marlowes	60.8	36.4	23.6	51.4	31.6	22.1
(3-169) Rackstraw House, 40 Primrose Hill Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-171) 65 Quickswood	54.2	33.2	22.8	45.8	28.8	21.4
(3-180) 68 Queens Grove	60.8	36.4	23.6	51.4	31.6	22.1
(3-181) 617 Finchley Road	47.2	29.2	21.9	39.5	25.2	20.6
(3-183) 101 Dallas Road	66.7	38.7	25.0	55.4	33.3	23.2

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-185) Primrose Hill Lodge, Prince Albert Road	55.6	33.9	22.8	47.1	29.4	21.4
(3-186) 21 Prince Albert Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-187) 26 Regent's Park Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-188) 3 St Mark's Square	59.9	36.1	23.7	50.6	31.2	22.1
(3-189) 2 Malden Road	58.4	35.2	23.7	49.2	30.5	22.2
(3-190) 60 Malden Road	58.4	35.2	23.7	49.2	30.5	22.2
(3-191) 2 Malden Place	51.3	31.7	22.5	43.3	27.5	21.0
(3-192) 26 Meadowbank	55.6	33.9	22.8	47.1	29.4	21.4
(3-193) 116 Regent's Park Road	55.6	33.9	22.8	47.1	29.4	21.4
(3-194) Elsworthy Court, Elsworthy Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-195) 106 The Vale	50.6	30.9	22.9	42.2	26.7	21.5
(3-196) 75 Ridge Hill	51.9	31.6	23.0	43.2	27.2	21.6
(3-197) 63 Malcolm Crescent	56.2	33.7	23.8	47.2	29.3	22.3
(3-198) 1 Elliott Square	54.2	33.2	22.8	45.8	28.8	21.4
(3-199) 25 Elsworthy Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-200) Holyrood Court, 3-5 Gloucester Avenue	59.9	36.1	23.7	50.6	31.2	22.1
(3-201) 16 Prince Albert Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-202) St Paul's CE Primary School, Elsworthy Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-203) 113 The Vale	50.6	30.9	22.9	42.2	26.7	21.5
(3-204) 149 Hendon Way	51.9	31.6	23.0	43.2	27.2	21.6
(3-205) Wessex Gardens Primary School	51.9	31.6	23.0	43.2	27.2	21.6
(3-206) 107 The Vale	50.6	30.9	22.9	42.2	26.7	21.5
(3-207) 100 The Vale	50.6	30.9	22.9	42.2	26.7	21.5

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-208) 28 Brocas Close	54.2	33.2	22.8	45.8	28.8	21.4
(3-209) 112 Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-210) 110 Haverstock Hill	54.2	33.2	22.8	45.8	28.8	21.4
(3-211) Beaumont Walk, Adelaide Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-212) Whitton, 89 King Henrys Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-213) Flats 6-12, 38 Primrose Hill Road	54.2	33.2	22.8	45.8	28.8	21.4
(3-214) Wendling, Southampton Road	52.3	32.2	22.4	44.3	28.0	21.0
(3-215) 4 Mansfield Road	52.3	32.2	22.4	44.3	28.0	21.0
(3-216) 60 Regent's Park Road	59.9	36.1	23.7	50.6	31.2	22.1
(3-217) 5-8 St Mark's Square	59.9	36.1	23.7	50.6	31.2	22.1
(3-218) 4 St Mark's Square	59.9	36.1	23.7	50.6	31.2	22.1
(3-219) 25 Queen's Grove	60.8	36.4	23.6	51.4	31.6	22.1
(3-220) 26 St John's Wood Park	60.8	36.4	23.6	51.4	31.6	22.1
(3-221) Rossetti House, 59 Ordnance Hill	60.8	36.4	23.6	51.4	31.6	22.1
(3-222) 56 Avenue Road, Camden	60.8	36.4	23.6	51.4	31.6	22.1
(3-223) 75 Avenue Road, Camden	60.8	36.4	23.6	51.4	31.6	22.1
(3-224) Middlefield, Boundary Road	60.8	36.4	23.6	51.4	31.6	22.1
(3-225) 62 Elsworthy Road	55.6	33.9	22.8	47.1	29.4	21.4
(3-226) 55 Elsworthy Road	55.6	33.9	22.8	47.1	29.4	21.4
(3-227) 176 Hendon Way	66.0	38.5	25.1	54.5	33.0	23.3
(3-228) 17 Hornby Close, Adelaide Road	62.9	37.4	24.1	53.5	32.5	22.6
(3-E) Brent Reservoir (ecological receptor)	66.7	38.7	25.0	55.4	33.3	23.2

Detailed modelling results

2.3.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor derived using the approach in the previous EPUK guidance has also been provided, together with that reported in the main ES. Results presented correspond to the greatest impact at each receptor from the three scenarios assessed.

2.3.6 As set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, Environmental Protection UK (EPUK) and the IAQM have issued new guidance[4] on assessing air quality impacts. The main difference from the previous guidance is that it describes a similar increase in pollutant concentrations as having greater adverse impact, and therefore having a greater potential for significant effects. For example, where the baseline NO2 concentration is under the standard at 38µg/m^3 and increases by 1.5µg/m^3 to 39.5µg/m^3 with the scheme, the previous guidance defined this as a slight adverse impact, while the new guidance defines this as a moderate adverse impact. The increased emphasis on severity in the descriptors in the new guidance is particularly accentuated for receptors where baseline concentrations are at or above the objective value, as is the case in parts of London. This is illustrated in the results in Table 5. The 6th column shows the impact descriptor using the 2015 guidance, and the 7th column shows the impact descriptor using the 2010 guidance. It can be seen that more of the descriptors using the 2015 guidance are moderate or substantial than with the 2010 guidance, for the same change in annual mean NO2 concentration.

[4] Moorcroft and Barrowcliffe et al., (2015), Land-Use Planning and Development Control: Planning for Air Quality. London: Institute of Air Quality Management.

Table 5 : Summary of annual mean NO2 results (Stage A construction phase)

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-1	66.9	55.6	55.7	0.1	Negligible	Negligible	N/A
3-5	77.1	57.8	57.9	0.1	Negligible	Negligible	Negligible
3-6	63.4	51.6	51.8	0.2	Moderate adverse	Negligible	Slight adverse
3-8	81.1	66.5	66.8	0.4	Moderate adverse	Negligible	Slight adverse
3-9	68.0	52.6	52.6	0.0	Negligible	Negligible	Slight adverse
3-13	66.1	53.9	54.3	0.3	Moderate adverse	Negligible	Slight adverse
3-16	54.9	45.8	46.4	0.7	Substantial adverse	Slight adverse	Negligible
3-21	54.2	45.7	45.6	-0.1	Negligible	Negligible	Negligible
3-26	67.6	54.6	55.1	0.5	Moderate adverse	Slight adverse	Slight adverse
3-28	66.6	53.6	54.0	0.4	Moderate adverse	Slight adverse	Slight adverse
3-32	69.9	56.8	57.1	0.3	Moderate adverse	Negligible	Slight adverse
3-37	85.0	60.3	60.0	-0.4	Moderate beneficial	Negligible	Slight adverse
3-40	62.7	51.7	52.5	0.8	Substantial adverse	Slight adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-41	50.5	42.7	44.5	1.8	Substantial adverse	Slight adverse	Substantial adverse
3-43	58.5	48.7	48.9	0.2	Moderate adverse	Negligible	Slight adverse
3-49	56.9	47.6	48.1	0.5	Moderate adverse	Slight adverse	N/A
3-50	65.8	54.1	54.6	0.5	Moderate adverse	Slight adverse	Slight adverse
3-51	65.9	53.9	54.5	0.6	Moderate adverse	Slight adverse	Slight adverse
3-52	62.9	51.5	52.1	0.7	Substantial adverse	Slight adverse	Slight adverse
3-53	58.6	48.3	48.8	0.5	Moderate adverse	Slight adverse	Slight adverse
3-54	65.1	54.5	55.4	0.8	Substantial adverse	Slight adverse	Moderate adverse
3-55	57.8	48.1	48.3	0.2	Moderate adverse	Negligible	Slight adverse
3-56	58.6	47.9	48.3	0.4	Moderate adverse	Slight adverse	Slight adverse
3-57	59.8	48.9	49.4	0.5	Moderate adverse	Slight adverse	Moderate adverse
3-58	59.5	48.6	49.0	0.4	Moderate adverse	Slight adverse	Slight adverse
3-59	58.9	48.1	48.5	0.4	Moderate adverse	Slight adverse	Moderate adverse
3-60	64.9	53.6	53.8	0.2	Moderate adverse	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-61	93.2	74.8	75.1	0.3	Moderate adverse	Negligible	Slight adverse
3-62	72.7	57.5	57.5	0.0	Negligible	Negligible	Slight adverse
3-63	66.6	55.2	55.4	0.2	Moderate adverse	Negligible	Slight adverse
3-64	76.8	60.2	60.1	-0.1	Negligible	Negligible	Slight adverse
3-65	69.1	59.4	59.8	0.4	Moderate adverse	Negligible	Slight adverse
3-66	72.3	58.9	59.0	0.1	Negligible	Negligible	Slight adverse
3-67	66.5	55.7	56.0	0.3	Moderate adverse	Negligible	Slight adverse
3-69	70.6	57.1	57.5	0.3	Moderate adverse	Negligible	Slight adverse
3-70	78.8	63.4	63.8	0.4	Moderate adverse	Slight adverse	Slight adverse
3-71	77.9	63.3	63.7	0.4	Moderate adverse	Negligible	Slight adverse
3-72	76.2	61.9	62.3	0.4	Moderate adverse	Negligible	Slight adverse
3-73	74.3	60.5	60.9	0.4	Moderate adverse	Negligible	Slight adverse
3-74	67.9	55.3	55.6	0.3	Moderate adverse	Negligible	Slight adverse
3-75	71.9	58.4	58.7	0.4	Moderate adverse	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-76	66.4	53.4	53.8	0.4	Moderate adverse	Slight adverse	Slight adverse
3-77	65.4	52.8	53.2	0.4	Moderate adverse	Slight adverse	Slight adverse
3-78	65.7	52.8	53.2	0.4	Moderate adverse	Negligible	Slight adverse
3-79	69.0	55.3	55.7	0.4	Moderate adverse	Slight adverse	Slight adverse
3-80	65.5	51.6	52.0	0.4	Moderate adverse	Negligible	Slight adverse
3-81	57.7	45.9	46.2	0.3	Moderate adverse	Negligible	Slight adverse
3-82	65.5	52.0	52.4	0.4	Moderate adverse	Slight adverse	Slight adverse
3-83	68.1	55.9	56.4	0.5	Moderate adverse	Slight adverse	Slight adverse
3-84	72.1	59.7	60.4	0.7	Substantial adverse	Slight adverse	Slight adverse
3-85	74.5	59.9	60.5	0.6	Moderate adverse	Slight adverse	Slight adverse
3-86	64.8	51.7	52.0	0.3	Moderate adverse	Negligible	Slight adverse
3-87	70.0	55.4	55.7	0.2	Moderate adverse	Negligible	Slight adverse
3-88	68.9	54.7	55.0	0.2	Moderate adverse	Negligible	Slight adverse
3-89	61.3	49.0	49.3	0.3	Moderate adverse	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-90	65.8	52.9	53.3	0.5	Moderate adverse	Slight adverse	Slight adverse
3-91	68.0	54.4	54.9	0.5	Moderate adverse	Slight adverse	Slight adverse
3-92	67.4	53.8	54.1	0.3	Moderate adverse	Negligible	Slight adverse
3-93	79.3	62.8	63.2	0.4	Moderate adverse	Slight adverse	Slight adverse
3-94	71.6	56.6	56.8	0.2	Negligible	Negligible	Slight adverse
3-95	60.1	48.0	48.2	0.2	Negligible	Negligible	Slight adverse
3-96	70.4	56.4	56.7	0.3	Moderate adverse	Negligible	Slight adverse
3-97	77.6	62.0	62.4	0.4	Moderate adverse	Negligible	Moderate adverse
3-98	54.9	43.7	43.9	0.2	Negligible	Negligible	Slight adverse
3-99	56.1	45.4	45.6	0.1	Negligible	Negligible	Slight adverse
3-100	56.4	45.9	46.1	0.2	Moderate adverse	Negligible	Slight adverse
3-101	51.5	42.1	42.3	0.2	Moderate adverse	Negligible	Slight adverse
3-102	58.1	47.3	47.5	0.1	Negligible	Negligible	Slight adverse
3-103	49.5	40.6	40.7	0.1	Negligible	Negligible	Slight adverse

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-104	57.5	46.9	47.1	0.2	Negligible	Negligible	Slight adverse
3-129	46.4	40.5	42.0	1.5	Moderate adverse	Slight adverse	Substantial adverse
3-130	46.3	40.7	42.3	1.6	Moderate adverse	Slight adverse	Substantial adverse
3-131	50.0	44.8	47.1	2.3	Substantial adverse	Moderate adverse	Substantial adverse
3-132	53.4	41.8	45.1	3.3	Substantial adverse	Moderate adverse	Substantial adverse
3-133	48.0	37.9	39.7	1.8	Moderate adverse	Slight adverse	Substantial adverse
3-134	51.2	39.3	41.8	2.5	Substantial adverse	Moderate adverse	Substantial adverse
3-135	54.2	43.9	44.5	0.6	Substantial adverse	Slight adverse	Moderate adverse
3-136	53.1	42.5	45.2	2.8	Substantial adverse	Moderate adverse	Substantial adverse
3-147	55.8	45.2	45.7	0.6	Moderate adverse	Slight adverse	Negligible
3-148	63.1	52.6	52.8	0.2	Moderate adverse	Negligible	Negligible
3-151	61.2	50.5	51.3	0.8	Substantial adverse	Slight adverse	Negligible
3-153	52.4	46.3	46.6	0.3	Moderate adverse	Negligible	Negligible
3-156	52.5	44.8	45.4	0.6	Moderate adverse	Slight adverse	Negligible

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-159	43.2	38.3	38.8	0.5	Slight adverse	Slight adverse	Negligible
3-160	55.9	47.2	48.0	0.8	Substantial adverse	Slight adverse	Negligible
3-163	60.4	49.6	50.0	0.5	Moderate adverse	Slight adverse	Moderate adverse
3-169	52.3	45.3	45.0	-0.4	Moderate beneficial	Negligible	Negligible
3-171	53.7	45.4	44.5	-0.9	Substantial beneficial	Slight beneficial	Negligible
3-180	65.8	54.2	54.5	0.4	Moderate adverse	Negligible	Moderate adverse
3-181	60.6	48.0	48.3	0.3	Moderate adverse	Negligible	Slight adverse
3-183	78.7	53.2	53.2	0.0	Negligible	Negligible	Negligible
3-185	52.6	44.8	44.6	-0.2	Negligible	Negligible	N/A
3-186	55.6	47.4	47.3	-0.1	Negligible	Negligible	N/A
3-187	52.0	45.2	47.2	2.1	Substantial adverse	Moderate adverse	N/A
3-188	52.4	44.7	45.5	0.8	Substantial adverse	Slight adverse	N/A
3-189	54.8	48.0	48.5	0.6	Moderate adverse	Slight adverse	N/A
3-190	47.7	42.8	43.6	0.8	Moderate adverse	Slight adverse	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-191	44.0	39.5	40.3	0.8	Moderate adverse	Slight adverse	N/A
3-192	47.5	39.6	40.6	1.0	Moderate adverse	Slight adverse	N/A
3-193	47.4	39.4	40.5	1.1	Moderate adverse	Slight adverse	N/A
3-194	47.7	41.4	41.3	-0.2	Negligible	Negligible	N/A
3-195	53.6	44.0	44.2	0.1	Negligible	Negligible	N/A
3-196	61.0	50.6	50.7	0.1	Negligible	Negligible	N/A
3-197	56.2	48.8	48.9	0.0	Negligible	Negligible	N/A
3-198	53.4	45.8	45.0	-0.8	Substantial beneficial	Slight beneficial	N/A
3-199	45.2	40.0	40.0	0.0	Negligible	Negligible	N/A
3-200	52.7	45.0	46.0	1.0	Substantial adverse	Slight adverse	N/A
3-201	54.4	46.0	46.2	0.2	Negligible	Negligible	N/A
3-202	43.5	37.9	37.7	-0.2	Negligible	Negligible	N/A
3-203	53.8	44.2	44.4	0.2	Negligible	Negligible	N/A
3-204	53.7	43.9	44.0	0.1	Negligible	Negligible	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-205	59.6	49.3	49.4	0.1	Negligible	Negligible	N/A
3-206	65.3	53.8	54.0	0.3	Moderate adverse	Negligible	N/A
3-207	63.9	52.5	52.7	0.2	Moderate adverse	Negligible	N/A
3-208	47.5	40.0	39.5	-0.5	Slight beneficial	Slight beneficial	N/A
3-209	49.0	41.1	42.3	1.2	Moderate adverse	Slight adverse	N/A
3-210	48.0	39.9	41.1	1.2	Moderate adverse	Slight adverse	N/A
3-211	46.2	39.3	39.7	0.5	Slight adverse	Slight adverse	N/A
3-212	48.5	41.2	41.4	0.2	Moderate adverse	Negligible	N/A
3-213	55.2	46.7	47.1	0.4	Moderate adverse	Negligible	N/A
3-214	42.9	38.2	38.8	0.6	Slight adverse	Slight adverse	N/A
3-215	53.9	49.0	49.6	0.6	Moderate adverse	Slight adverse	N/A
3-216	50.0	42.2	43.1	0.9	Moderate adverse	Slight adverse	N/A
3-217	52.2	45.0	46.1	1.1	Substantial adverse	Slight adverse	N/A
3-218	52.0	44.4	45.6	1.2	Substantial adverse	Slight adverse	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-219	51.0	43.3	43.2	-0.2	Negligible	Negligible	N/A
3-220	49.2	42.3	42.2	-0.1	Negligible	Negligible	N/A
3-221	50.7	43.5	43.3	-0.2	Negligible	Negligible	N/A
3-222	51.6	42.8	42.9	0.2	Negligible	Negligible	N/A
3-223	50.0	41.2	41.3	0.1	Negligible	Negligible	N/A
3-224	69.6	56.5	57.4	0.9	Substantial adverse	Slight adverse	N/A
3-225	47.2	41.7	41.8	0.1	Negligible	Negligible	N/A
3-226	47.1	41.4	41.5	0.1	Negligible	Negligible	N/A
3-227	63.2	52.7	52.8	0.1	Negligible	Negligible	N/A
3-228	53.3	44.0	43.6	-0.5	Moderate beneficial	Slight beneficial	N/A
3-E	46.8	39.0	39.0	0.0	Negligible	Negligible	N/A

Table 6 : Summary of annual mean PM10 results (Stage A construction phase)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-1	27.7	25.1	25.1	0.0	Negligible	Negligible	N/A
3-5	30.5	27.9	28.0	0.1	Negligible	Negligible	Negligible
3-6	27.8	25.3	25.4	0.1	Negligible	Negligible	Negligible
3-8	30.2	26.3	26.4	0.1	Negligible	Negligible	Negligible
3-9	28.3	24.7	24.7	0.0	Negligible	Negligible	Negligible
3-13	27.8	25.2	25.3	0.1	Negligible	Negligible	Negligible
3-16	25.9	23.9	23.9	0.1	Negligible	Negligible	Negligible
3-21	25.9	23.9	23.9	0.0	Negligible	Negligible	Negligible
3-26	27.3	24.7	24.8	0.1	Negligible	Negligible	Negligible
3-28	27.2	24.6	24.7	0.1	Negligible	Negligible	Negligible
3-32	28.9	26.1	26.2	0.1	Negligible	Negligible	Negligible
3-37	30.7	25.9	25.8	-0.1	Negligible	Negligible	Negligible
3-40	26.8	24.5	24.6	0.1	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-41	24.6	22.7	22.8	0.1	Negligible	Negligible	Negligible
3-43	26.0	24.0	24.0	0.0	Negligible	Negligible	Negligible
3-49	26.2	24.1	24.2	0.1	Negligible	Negligible	N/A
3-50	26.9	24.7	24.8	0.1	Negligible	Negligible	Negligible
3-51	26.9	24.7	24.7	0.1	Negligible	Negligible	Negligible
3-52	26.5	24.3	24.4	0.1	Negligible	Negligible	Negligible
3-53	25.9	23.9	23.9	0.1	Negligible	Negligible	Negligible
3-54	26.4	24.4	24.5	0.1	Negligible	Negligible	Negligible
3-55	26.0	24.1	24.1	0.0	Negligible	Negligible	Negligible
3-56	26.1	24.1	24.1	0.1	Negligible	Negligible	Negligible
3-57	26.3	24.2	24.2	0.1	Negligible	Negligible	Negligible
3-58	26.3	24.1	24.2	0.1	Negligible	Negligible	Negligible
3-59	26.2	24.1	24.2	0.1	Negligible	Negligible	Negligible
3-60	27.4	24.9	24.9	0.0	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-61	32.2	28.1	28.1	0.0	Negligible	Negligible	Negligible
3-62	28.4	25.4	25.4	0.0	Negligible	Negligible	Negligible
3-63	27.6	24.9	24.9	0.0	Negligible	Negligible	Negligible
3-64	29.8	25.7	25.7	0.0	Negligible	Negligible	Negligible
3-65	28.6	26.3	26.3	0.1	Negligible	Negligible	Negligible
3-66	29.3	26.2	26.2	0.1	Negligible	Negligible	Negligible
3-67	28.3	25.9	26.0	0.1	Negligible	Negligible	Negligible
3-69	28.6	25.8	25.9	0.1	Negligible	Negligible	Negligible
3-70	30.3	27.0	27.1	0.1	Negligible	Negligible	Negligible
3-71	30.4	27.3	27.4	0.1	Negligible	Negligible	Negligible
3-72	30.0	27.0	27.1	0.1	Negligible	Negligible	Negligible
3-73	29.7	26.7	26.8	0.1	Negligible	Negligible	Negligible
3-74	28.4	25.7	25.8	0.1	Negligible	Negligible	Negligible
3-75	29.1	26.3	26.4	0.1	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-76	27.1	24.5	24.6	0.1	Negligible	Negligible	Negligible
3-77	26.9	24.4	24.5	0.1	Negligible	Negligible	Negligible
3-78	27.0	24.4	24.5	0.1	Negligible	Negligible	Negligible
3-79	27.7	24.9	25.0	0.1	Negligible	Negligible	Negligible
3-80	27.3	24.7	24.8	0.1	Negligible	Negligible	Negligible
3-81	25.9	23.7	23.7	0.1	Negligible	Negligible	Negligible
3-82	27.2	24.6	24.7	0.1	Negligible	Negligible	Negligible
3-83	27.3	24.7	24.8	0.1	Negligible	Negligible	Negligible
3-84	27.9	25.3	25.4	0.1	Negligible	Negligible	Negligible
3-85	28.5	25.6	25.7	0.1	Negligible	Negligible	Negligible
3-86	26.5	24.2	24.3	0.1	Negligible	Negligible	Negligible
3-87	27.2	24.5	24.6	0.0	Negligible	Negligible	Negligible
3-88	27.0	24.5	24.6	0.1	Negligible	Negligible	Negligible
3-89	26.1	23.8	23.9	0.1	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-90	27.1	24.6	24.7	0.1	Negligible	Negligible	Negligible
3-91	27.4	24.8	24.9	0.1	Negligible	Negligible	Negligible
3-92	27.0	24.5	24.6	0.1	Negligible	Negligible	Negligible
3-93	29.1	25.9	26.0	0.1	Negligible	Negligible	Negligible
3-94	28.5	25.7	25.8	0.1	Negligible	Negligible	Negligible
3-95	26.3	24.0	24.1	0.0	Negligible	Negligible	Negligible
3-96	27.3	24.8	24.8	0.1	Negligible	Negligible	Negligible
3-97	28.8	25.8	25.9	0.1	Negligible	Negligible	Negligible
3-98	25.9	23.8	23.8	0.0	Negligible	Negligible	Negligible
3-99	26.5	24.3	24.4	0.1	Negligible	Negligible	Negligible
3-100	26.3	24.2	24.2	0.1	Negligible	Negligible	Negligible
3-101	25.4	23.4	23.5	0.0	Negligible	Negligible	Negligible
3-102	27.1	24.9	24.9	0.1	Negligible	Negligible	Negligible
3-103	25.3	23.5	23.5	0.0	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-104	27.0	24.8	24.9	0.1	Negligible	Negligible	Negligible
3-129	23.9	22.4	22.5	0.1	Negligible	Negligible	Negligible
3-130	23.9	22.4	22.5	0.1	Negligible	Negligible	Negligible
3-131	24.3	22.9	23.1	0.1	Negligible	Negligible	Negligible
3-132	24.8	22.4	22.7	0.3	Negligible	Negligible	Negligible
3-133	24.4	22.2	22.4	0.2	Negligible	Negligible	Negligible
3-134	24.9	22.4	22.7	0.3	Negligible	Negligible	Negligible
3-135	25.6	23.4	23.4	0.0	Negligible	Negligible	Negligible
3-136	25.3	23.1	23.3	0.2	Negligible	Negligible	Negligible
3-147	26.0	23.9	24.0	0.1	Negligible	Negligible	Negligible
3-148	28.6	26.3	26.4	0.1	Negligible	Negligible	Negligible
3-151	26.4	24.2	24.3	0.1	Negligible	Negligible	Negligible
3-153	24.7	23.2	23.3	0.0	Negligible	Negligible	Negligible
3-156	25.5	23.7	23.8	0.1	Negligible	Negligible	Negligible

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-159	23.3	22.0	22.0	0.1	Negligible	Negligible	Negligible
3-160	26.0	23.9	24.1	0.2	Negligible	Negligible	Negligible
3-163	26.4	24.2	24.3	0.1	Negligible	Negligible	Negligible
3-169	24.9	23.2	23.2	-0.1	Negligible	Negligible	Negligible
3-171	25.2	23.3	23.2	-0.1	Negligible	Negligible	Negligible
3-180	27.3	25.1	25.2	0.1	Negligible	Negligible	Negligible
3-181	26.0	23.7	23.8	0.1	Negligible	Negligible	Negligible
3-183	31.9	27.1	27.2	0.1	Negligible	Negligible	Negligible
3-185	25.3	23.5	23.4	0.0	Negligible	Negligible	N/A
3-186	26.2	24.1	24.1	0.0	Negligible	Negligible	N/A
3-187	25.5	23.8	24.0	0.2	Negligible	Negligible	N/A
3-188	25.5	23.6	23.8	0.2	Negligible	Negligible	N/A
3-189	25.8	24.2	24.3	0.1	Negligible	Negligible	N/A
3-190	24.8	23.5	23.6	0.1	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-191	23.5	22.3	22.4	0.1	Negligible	Negligible	N/A
3-192	24.5	22.6	22.8	0.2	Negligible	Negligible	N/A
3-193	24.4	22.5	22.8	0.3	Negligible	Negligible	N/A
3-194	24.4	22.9	22.9	0.0	Negligible	Negligible	N/A
3-195	26.1	24.1	24.1	0.1	Negligible	Negligible	N/A
3-196	28.4	26.1	26.2	0.1	Negligible	Negligible	N/A
3-197	27.7	25.8	25.8	0.0	Negligible	Negligible	N/A
3-198	25.2	23.5	23.4	-0.1	Negligible	Negligible	N/A
3-199	24.0	22.6	22.6	0.0	Negligible	Negligible	N/A
3-200	25.5	23.7	23.8	0.2	Negligible	Negligible	N/A
3-201	25.9	23.9	24.0	0.0	Negligible	Negligible	N/A
3-202	23.7	22.3	22.3	0.0	Negligible	Negligible	N/A
3-203	25.9	23.9	24.0	0.0	Negligible	Negligible	N/A
3-204	25.9	23.9	23.9	0.0	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-205	28.6	26.4	26.4	0.1	Negligible	Negligible	N/A
3-206	28.3	25.9	25.9	0.1	Negligible	Negligible	N/A
3-207	28.1	25.7	25.8	0.1	Negligible	Negligible	N/A
3-208	24.3	22.5	22.5	-0.1	Negligible	Negligible	N/A
3-209	24.5	22.6	22.7	0.1	Negligible	Negligible	N/A
3-210	24.3	22.5	22.6	0.1	Negligible	Negligible	N/A
3-211	24.1	22.5	22.5	0.1	Negligible	Negligible	N/A
3-212	24.5	22.8	22.9	0.1	Negligible	Negligible	N/A
3-213	25.5	23.6	23.7	0.1	Negligible	Negligible	N/A
3-214	23.3	22.0	22.0	0.1	Negligible	Negligible	N/A
3-215	24.7	23.5	23.6	0.1	Negligible	Negligible	N/A
3-216	25.3	23.4	23.6	0.2	Negligible	Negligible	N/A
3-217	25.5	23.7	23.9	0.2	Negligible	Negligible	N/A
3-218	25.5	23.6	23.8	0.2	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-219	25.2	23.5	23.4	0.0	Negligible	Negligible	N/A
3-220	24.9	23.3	23.3	0.0	Negligible	Negligible	N/A
3-221	25.2	23.5	23.4	0.0	Negligible	Negligible	N/A
3-222	25.5	23.3	23.4	0.0	Negligible	Negligible	N/A
3-223	25.2	23.1	23.1	0.0	Negligible	Negligible	N/A
3-224	27.7	24.9	25.0	0.1	Negligible	Negligible	N/A
3-225	24.2	22.8	22.8	0.0	Negligible	Negligible	N/A
3-226	24.2	22.7	22.8	0.0	Negligible	Negligible	N/A
3-227	30.3	27.8	27.9	0.1	Negligible	Negligible	N/A
3-228	25.9	23.8	23.8	-0.1	Negligible	Negligible	N/A
3-E	25.7	23.8	23.8	0.0	Negligible	Negligible	N/A

Table 7 : Summary of 24-hour mean PM10 results (Stage A construction phase)

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-1	20	13	13	0	Negligible	Negligible	N/A
3-5	29	20	21	0	Negligible	Negligible	Negligible
3-6	20	13	13	0	Negligible	Negligible	Negligible
3-8	28	16	16	0	Negligible	Negligible	Negligible
3-9	22	12	12	0	Negligible	Negligible	Negligible
3-13	20	13	13	0	Negligible	Negligible	Negligible
3-16	15	10	10	0	Negligible	Negligible	Negligible
3-21	15	10	10	0	Negligible	Negligible	Negligible
3-26	19	12	12	0	Negligible	Negligible	Negligible
3-28	18	12	12	0	Negligible	Negligible	Negligible
3-32	23	15	16	0	Negligible	Negligible	Negligible
3-37	30	15	14	0	Negligible	Negligible	Negligible
3-40	17	11	11	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-41	11	8	8	0	Negligible	Negligible	Negligible
3-43	15	10	10	0	Negligible	Negligible	Negligible
3-49	15	10	10	0	Negligible	Negligible	N/A
3-50	18	12	12	0	Negligible	Negligible	Negligible
3-51	17	12	12	0	Negligible	Negligible	Negligible
3-52	16	11	11	0	Negligible	Negligible	Negligible
3-53	15	10	10	0	Negligible	Negligible	Negligible
3-54	16	11	11	0	Negligible	Negligible	Negligible
3-55	15	10	10	0	Negligible	Negligible	Negligible
3-56	15	10	10	0	Negligible	Negligible	Negligible
3-57	16	10	11	0	Negligible	Negligible	Negligible
3-58	16	10	11	0	Negligible	Negligible	Negligible
3-59	15	10	10	0	Negligible	Negligible	Negligible
3-60	19	12	12	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-61	36	21	21	0	Negligible	Negligible	Negligible
3-62	22	13	13	0	Negligible	Negligible	Negligible
3-63	20	12	12	0	Negligible	Negligible	Negligible
3-64	27	14	14	0	Negligible	Negligible	Negligible
3-65	23	16	16	0	Negligible	Negligible	Negligible
3-66	25	15	16	0	Negligible	Negligible	Negligible
3-67	22	15	15	0	Negligible	Negligible	Negligible
3-69	23	14	15	0	Negligible	Negligible	Negligible
3-70	28	18	18	0	Negligible	Negligible	Negligible
3-71	29	18	19	0	Negligible	Negligible	Negligible
3-72	28	18	18	0	Negligible	Negligible	Negligible
3-73	26	17	17	0	Negligible	Negligible	Negligible
3-74	22	14	14	0	Negligible	Negligible	Negligible
3-75	24	16	16	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-76	18	11	12	0	Negligible	Negligible	Negligible
3-77	17	11	11	0	Negligible	Negligible	Negligible
3-78	18	11	11	0	Negligible	Negligible	Negligible
3-79	20	12	12	0	Negligible	Negligible	Negligible
3-80	18	12	12	0	Negligible	Negligible	Negligible
3-81	15	9	10	0	Negligible	Negligible	Negligible
3-82	18	12	12	0	Negligible	Negligible	Negligible
3-83	19	12	12	0	Negligible	Negligible	Negligible
3-84	21	13	13	0	Negligible	Negligible	Negligible
3-85	22	14	14	0	Negligible	Negligible	Negligible
3-86	16	11	11	0	Negligible	Negligible	Negligible
3-87	18	11	11	0	Negligible	Negligible	Negligible
3-88	18	11	11	0	Negligible	Negligible	Negligible
3-89	15	10	10	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-90	18	11	12	0	Negligible	Negligible	Negligible
3-91	19	12	12	0	Negligible	Negligible	Negligible
3-92	18	11	11	0	Negligible	Negligible	Negligible
3-93	24	15	15	0	Negligible	Negligible	Negligible
3-94	22	14	14	0	Negligible	Negligible	Negligible
3-95	16	10	10	0	Negligible	Negligible	Negligible
3-96	19	12	12	0	Negligible	Negligible	Negligible
3-97	23	14	15	0	Negligible	Negligible	Negligible
3-98	15	10	10	0	Negligible	Negligible	Negligible
3-99	16	11	11	0	Negligible	Negligible	Negligible
3-100	16	10	11	0	Negligible	Negligible	Negligible
3-101	13	9	9	0	Negligible	Negligible	Negligible
3-102	18	12	12	0	Negligible	Negligible	Negligible
3-103	13	9	9	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-104	18	12	12	0	Negligible	Negligible	Negligible
3-129	10	7	7	0	Negligible	Negligible	Negligible
3-130	10	7	7	0	Negligible	Negligible	Negligible
3-131	11	8	8	0	Negligible	Negligible	Negligible
3-132	12	7	8	0	Negligible	Negligible	Negligible
3-133	11	7	7	0	Negligible	Negligible	Negligible
3-134	12	7	8	0	Negligible	Negligible	Negligible
3-135	14	9	9	0	Negligible	Negligible	Negligible
3-136	13	8	9	0	Negligible	Negligible	Negligible
3-147	15	10	10	0	Negligible	Negligible	Negligible
3-148	23	16	16	0	Negligible	Negligible	Negligible
3-151	16	11	11	0	Negligible	Negligible	Negligible
3-153	12	9	9	0	Negligible	Negligible	Negligible
3-156	14	9	10	0	Negligible	Negligible	Negligible

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-159	9	6	6	0	Negligible	Negligible	Negligible
3-160	15	10	10	0	Negligible	Negligible	Negligible
3-163	16	11	11	0	Negligible	Negligible	Negligible
3-169	12	8	8	0	Negligible	Negligible	Negligible
3-171	13	9	8	0	Negligible	Negligible	Negligible
3-180	19	13	13	0	Negligible	Negligible	Negligible
3-181	15	10	10	0	Negligible	Negligible	Negligible
3-183	35	18	18	0	Negligible	Negligible	Negligible
3-185	13	9	9	0	Negligible	Negligible	N/A
3-186	15	10	10	0	Negligible	Negligible	N/A
3-187	14	10	10	0	Negligible	Negligible	N/A
3-188	14	9	10	0	Negligible	Negligible	N/A
3-189	14	11	11	0	Negligible	Negligible	N/A
3-190	12	9	9	0	Negligible	Negligible	N/A

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-191	9	7	7	0	Negligible	Negligible	N/A
3-192	11	7	8	0	Negligible	Negligible	N/A
3-193	11	7	8	0	Negligible	Negligible	N/A
3-194	11	8	8	0	Negligible	Negligible	N/A
3-195	15	10	10	0	Negligible	Negligible	N/A
3-196	22	15	15	0	Negligible	Negligible	N/A
3-197	20	14	14	0	Negligible	Negligible	N/A
3-198	13	9	9	0	Negligible	Negligible	N/A
3-199	10	7	7	0	Negligible	Negligible	N/A
3-200	14	9	10	0	Negligible	Negligible	N/A
3-201	15	10	10	0	Negligible	Negligible	N/A
3-202	10	7	7	0	Negligible	Negligible	N/A
3-203	15	10	10	0	Negligible	Negligible	N/A
3-204	15	10	10	0	Negligible	Negligible	N/A

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-205	23	16	16	0	Negligible	Negligible	N/A
3-206	22	15	15	0	Negligible	Negligible	N/A
3-207	21	14	14	0	Negligible	Negligible	N/A
3-208	11	7	7	0	Negligible	Negligible	N/A
3-209	11	7	7	0	Negligible	Negligible	N/A
3-210	11	7	7	0	Negligible	Negligible	N/A
3-211	10	7	7	0	Negligible	Negligible	N/A
3-212	11	8	8	0	Negligible	Negligible	N/A
3-213	14	9	10	0	Negligible	Negligible	N/A
3-214	9	6	6	0	Negligible	Negligible	N/A
3-215	12	9	9	0	Negligible	Negligible	N/A
3-216	13	9	9	0	Negligible	Negligible	N/A
3-217	14	9	10	0	Negligible	Negligible	N/A
3-218	14	9	10	0	Negligible	Negligible	N/A

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-219	13	9	9	0	Negligible	Negligible	N/A
3-220	12	9	9	0	Negligible	Negligible	N/A
3-221	13	9	9	0	Negligible	Negligible	N/A
3-222	14	9	9	0	Negligible	Negligible	N/A
3-223	13	8	8	0	Negligible	Negligible	N/A
3-224	20	12	13	0	Negligible	Negligible	N/A
3-225	11	8	8	0	Negligible	Negligible	N/A
3-226	11	8	8	0	Negligible	Negligible	N/A
3-227	29	20	20	0	Negligible	Negligible	N/A
3-228	15	10	10	0	Negligible	Negligible	N/A
3-E	14	10	10	0	Negligible	Negligible	N/A

2.3.8 As detailed in paragraph 2.3.2, three peak construction scenarios were used in the assessment of the stage A construction. The following tables provide a comparison of the resulting impact descriptors across these scenarios.

Table 8 : Comparison of annual mean NO_2 results across peak construction scenarios (Stage A construction phase)

Receptor	**Annual mean NO_2 results**		
	Test 1 impact descriptor	**Test 2 impact descriptor**	**Test 3 impact descriptor**
3-1	Negligible	Negligible	Negligible
3-5	Negligible	Negligible	Negligible
3-6	Negligible	Negligible	Moderate adverse
3-8	Moderate beneficial	Negligible	Moderate adverse
3-9	Negligible	Negligible	Negligible
3-13	Negligible	Negligible	Moderate adverse
3-16	Substantial adverse	Moderate adverse	Substantial beneficial
3-21	Substantial beneficial	Negligible	Substantial beneficial
3-26	Negligible	Negligible	Moderate adverse
3-28	Negligible	Negligible	Moderate adverse
3-32	Negligible	Negligible	Moderate adverse
3-37	Substantial beneficial	Substantial beneficial	Moderate beneficial
3-40	Substantial adverse	Moderate adverse	Substantial beneficial
3-41	Negligible	Negligible	Substantial adverse
3-43	Moderate adverse	Moderate adverse	Negligible
3-49	Substantial beneficial	Substantial beneficial	Moderate adverse
3-50	Moderate adverse	Moderate adverse	Negligible
3-51	Moderate adverse	Moderate adverse	Negligible
3-52	Substantial adverse	Substantial adverse	Moderate adverse
3-53	Moderate adverse	Moderate adverse	Moderate adverse
3-54	Substantial adverse	Moderate adverse	Substantial adverse

Receptor	Annual mean NO2 results		
3-55	Moderate adverse	Moderate adverse	Moderate beneficial
3-56	Moderate adverse	Moderate adverse	Negligible
3-57	Moderate adverse	Moderate adverse	Negligible
3-58	Moderate adverse	Moderate adverse	Negligible
3-59	Moderate adverse	Moderate adverse	Negligible
3-60	Negligible	Moderate adverse	Negligible
3-61	Substantial beneficial	Moderate beneficial	Moderate adverse
3-62	Moderate beneficial	Negligible	Negligible
3-63	Negligible	Negligible	Moderate adverse
3-64	Moderate beneficial	Moderate beneficial	Negligible
3-65	Negligible	Negligible	Moderate adverse
3-66	Negligible	Negligible	Negligible
3-67	Negligible	Negligible	Moderate adverse
3-69	Negligible	Negligible	Moderate adverse
3-70	Moderate beneficial	Negligible	Moderate adverse
3-71	Moderate beneficial	Negligible	Moderate adverse
3-72	Negligible	Negligible	Moderate adverse
3-73	Negligible	Negligible	Moderate adverse
3-74	Negligible	Negligible	Moderate adverse
3-75	Negligible	Negligible	Moderate adverse
3-76	Negligible	Negligible	Moderate adverse
3-77	Moderate beneficial	Negligible	Moderate adverse
3-78	Negligible	Negligible	Moderate adverse
3-79	Negligible	Negligible	Moderate adverse

Receptor	Annual mean NO_2 results		
3-80	Negligible	Negligible	Moderate adverse
3-81	Negligible	Negligible	Moderate adverse
3-82	Negligible	Negligible	Moderate adverse
3-83	Negligible	Negligible	Moderate adverse
3-84	Negligible	Negligible	Substantial adverse
3-85	Negligible	Negligible	Moderate adverse
3-86	Negligible	Negligible	Moderate adverse
3-87	Negligible	Negligible	Moderate adverse
3-88	Negligible	Negligible	Moderate adverse
3-89	Negligible	Negligible	Moderate adverse
3-90	Negligible	Negligible	Moderate adverse
3-91	Negligible	Moderate adverse	Moderate adverse
3-92	Negligible	Negligible	Moderate adverse
3-93	Negligible	Negligible	Moderate adverse
3-94	Negligible	Negligible	Negligible
3-95	Negligible	Negligible	Negligible
3-96	Negligible	Negligible	Moderate adverse
3-97	Negligible	Negligible	Moderate adverse
3-98	Negligible	Negligible	Negligible
3-99	Negligible	Negligible	Negligible
3-100	Negligible	Negligible	Moderate adverse
3-101	Negligible	Negligible	Moderate adverse
3-102	Negligible	Negligible	Negligible
3-103	Negligible	Negligible	Negligible

Receptor	Annual mean NO2 results		
3-104	Negligible	Negligible	Negligible
3-129	Negligible	Negligible	Moderate adverse
3-130	Negligible	Negligible	Moderate adverse
3-131	Moderate beneficial	Moderate beneficial	Substantial adverse
3-132	Negligible	Negligible	Substantial adverse
3-133	Negligible	Negligible	Moderate adverse
3-134	Negligible	Negligible	Substantial adverse
3-135	Moderate adverse	Negligible	Substantial adverse
3-136	Negligible	Negligible	Substantial adverse
3-147	Substantial beneficial	Substantial beneficial	Moderate adverse
3-148	Negligible	Negligible	Moderate adverse
3-151	Substantial adverse	Moderate adverse	Substantial beneficial
3-153	Negligible	Negligible	Moderate adverse
3-156	Negligible	Negligible	Moderate adverse
3-159	Negligible	Negligible	Slight adverse
3-160	Moderate beneficial	Substantial beneficial	Substantial adverse
3-163	Moderate adverse	Moderate adverse	Negligible
3-169	Moderate beneficial	Moderate beneficial	Substantial beneficial
3-171	Substantial beneficial	Substantial beneficial	Substantial beneficial
3-180	Moderate adverse	Moderate adverse	Negligible
3-181	Negligible	Negligible	Moderate adverse
3-183	Negligible	Negligible	Negligible
3-185	Substantial beneficial	Substantial beneficial	Negligible
3-186	Substantial beneficial	Substantial beneficial	Negligible

Receptor	Annual mean NO2 results		
3-187	Substantial adverse	Moderate adverse	Substantial adverse
3-188	Moderate beneficial	Substantial beneficial	Substantial adverse
3-189	Moderate adverse	Negligible	Moderate adverse
3-190	Negligible	Negligible	Moderate adverse
3-191	Negligible	Negligible	Moderate adverse
3-192	Moderate beneficial	Moderate beneficial	Moderate adverse
3-193	Moderate beneficial	Moderate beneficial	Moderate adverse
3-194	Moderate beneficial	Moderate beneficial	Negligible
3-195	Negligible	Negligible	Negligible
3-196	Negligible	Negligible	Negligible
3-197	Negligible	Negligible	Negligible
3-198	Substantial beneficial	Substantial beneficial	Substantial beneficial
3-199	Negligible	Negligible	Moderate beneficial
3-200	Moderate adverse	Moderate beneficial	Substantial adverse
3-201	Substantial beneficial	Substantial beneficial	Negligible
3-202	Negligible	Negligible	Slight beneficial
3-203	Negligible	Negligible	Negligible
3-204	Negligible	Negligible	Negligible
3-205	Negligible	Negligible	Negligible
3-206	Negligible	Negligible	Moderate adverse
3-207	Negligible	Negligible	Moderate adverse
3-208	Slight beneficial	Slight beneficial	Moderate beneficial
3-209	Negligible	Negligible	Moderate adverse
3-210	Negligible	Negligible	Moderate adverse

Receptor	Annual mean NO2 results		
3-211	Slight adverse	Slight adverse	Substantial beneficial
3-212	Moderate beneficial	Moderate beneficial	Moderate adverse
3-213	Substantial beneficial	Substantial beneficial	Moderate adverse
3-214	Negligible	Negligible	Slight adverse
3-215	Negligible	Negligible	Moderate adverse
3-216	Moderate beneficial	Moderate beneficial	Moderate adverse
3-217	Substantial adverse	Moderate beneficial	Substantial adverse
3-218	Negligible	Substantial beneficial	Substantial adverse
3-219	Moderate beneficial	Negligible	Moderate beneficial
3-220	Moderate beneficial	Negligible	Moderate beneficial
3-221	Moderate beneficial	Negligible	Moderate beneficial
3-222	Moderate beneficial	Negligible	Moderate beneficial
3-223	Moderate beneficial	Negligible	Moderate beneficial
3-224	Substantial adverse	Substantial adverse	Negligible
3-225	Negligible	Negligible	Moderate beneficial
3-226	Negligible	Negligible	Moderate beneficial
3-227	Negligible	Negligible	Negligible
3-228	Moderate beneficial	Moderate beneficial	Moderate beneficial
3-E	Negligible	Negligible	Negligible

Table 9 : Comparison of annual mean PM10 results across peak construction scenarios (Stage A construction phase)

Receptor	Annual mean PM10 results		
	Test 1 impact descriptor	Test 2 impact descriptor	Test 3 impact descriptor
3-1	Negligible	Negligible	Negligible
3-5	Negligible	Negligible	Negligible
3-6	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-8	Negligible	Negligible	Negligible
3-9	Negligible	Negligible	Negligible
3-13	Negligible	Negligible	Negligible
3-16	Negligible	Negligible	Negligible
3-21	Negligible	Negligible	Negligible
3-26	Negligible	Negligible	Negligible
3-28	Negligible	Negligible	Negligible
3-32	Negligible	Negligible	Negligible
3-37	Negligible	Negligible	Negligible
3-40	Negligible	Negligible	Negligible
3-41	Negligible	Negligible	Negligible
3-43	Negligible	Negligible	Negligible
3-49	Negligible	Negligible	Negligible
3-50	Negligible	Negligible	Negligible
3-51	Negligible	Negligible	Negligible
3-52	Negligible	Negligible	Negligible
3-53	Negligible	Negligible	Negligible
3-54	Negligible	Negligible	Negligible
3-55	Negligible	Negligible	Negligible
3-56	Negligible	Negligible	Negligible
3-57	Negligible	Negligible	Negligible
3-58	Negligible	Negligible	Negligible
3-59	Negligible	Negligible	Negligible
3-60	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-61	Negligible	Negligible	Negligible
3-62	Negligible	Negligible	Negligible
3-63	Negligible	Negligible	Negligible
3-64	Negligible	Negligible	Negligible
3-65	Negligible	Negligible	Negligible
3-66	Negligible	Negligible	Negligible
3-67	Negligible	Negligible	Negligible
3-69	Negligible	Negligible	Negligible
3-70	Negligible	Negligible	Negligible
3-71	Negligible	Negligible	Negligible
3-72	Negligible	Negligible	Negligible
3-73	Negligible	Negligible	Negligible
3-74	Negligible	Negligible	Negligible
3-75	Negligible	Negligible	Negligible
3-76	Negligible	Negligible	Negligible
3-77	Negligible	Negligible	Negligible
3-78	Negligible	Negligible	Negligible
3-79	Negligible	Negligible	Negligible
3-80	Negligible	Negligible	Negligible
3-81	Negligible	Negligible	Negligible
3-82	Negligible	Negligible	Negligible
3-83	Negligible	Negligible	Negligible
3-84	Negligible	Negligible	Negligible
3-85	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-86	Negligible	Negligible	Negligible
3-87	Negligible	Negligible	Negligible
3-88	Negligible	Negligible	Negligible
3-89	Negligible	Negligible	Negligible
3-90	Negligible	Negligible	Negligible
3-91	Negligible	Negligible	Negligible
3-92	Negligible	Negligible	Negligible
3-93	Negligible	Negligible	Negligible
3-94	Negligible	Negligible	Negligible
3-95	Negligible	Negligible	Negligible
3-96	Negligible	Negligible	Negligible
3-97	Negligible	Negligible	Negligible
3-98	Negligible	Negligible	Negligible
3-99	Negligible	Negligible	Negligible
3-100	Negligible	Negligible	Negligible
3-101	Negligible	Negligible	Negligible
3-102	Negligible	Negligible	Negligible
3-103	Negligible	Negligible	Negligible
3-104	Negligible	Negligible	Negligible
3-129	Negligible	Negligible	Negligible
3-130	Negligible	Negligible	Negligible
3-131	Negligible	Negligible	Negligible
3-132	Negligible	Negligible	Negligible
3-133	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-134	Negligible	Negligible	Negligible
3-135	Negligible	Negligible	Negligible
3-136	Negligible	Negligible	Negligible
3-147	Negligible	Negligible	Negligible
3-148	Negligible	Negligible	Negligible
3-151	Negligible	Negligible	Negligible
3-153	Negligible	Negligible	Negligible
3-156	Negligible	Negligible	Negligible
3-159	Negligible	Negligible	Negligible
3-160	Negligible	Negligible	Negligible
3-163	Negligible	Negligible	Negligible
3-169	Negligible	Negligible	Negligible
3-171	Negligible	Negligible	Negligible
3-180	Negligible	Negligible	Negligible
3-181	Negligible	Negligible	Negligible
3-183	Negligible	Negligible	Negligible
3-185	Negligible	Negligible	Negligible
3-186	Negligible	Negligible	Negligible
3-187	Negligible	Negligible	Negligible
3-188	Negligible	Negligible	Negligible
3-189	Negligible	Negligible	Negligible
3-190	Negligible	Negligible	Negligible
3-191	Negligible	Negligible	Negligible
3-192	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-193	Negligible	Negligible	Negligible
3-194	Negligible	Negligible	Negligible
3-195	Negligible	Negligible	Negligible
3-196	Negligible	Negligible	Negligible
3-197	Negligible	Negligible	Negligible
3-198	Negligible	Negligible	Negligible
3-199	Negligible	Negligible	Negligible
3-200	Negligible	Negligible	Negligible
3-201	Negligible	Negligible	Negligible
3-202	Negligible	Negligible	Negligible
3-203	Negligible	Negligible	Negligible
3-204	Negligible	Negligible	Negligible
3-205	Negligible	Negligible	Negligible
3-206	Negligible	Negligible	Negligible
3-207	Negligible	Negligible	Negligible
3-208	Negligible	Negligible	Negligible
3-209	Negligible	Negligible	Negligible
3-210	Negligible	Negligible	Negligible
3-211	Negligible	Negligible	Negligible
3-212	Negligible	Negligible	Negligible
3-213	Negligible	Negligible	Negligible
3-214	Negligible	Negligible	Negligible
3-215	Negligible	Negligible	Negligible
3-216	Negligible	Negligible	Negligible

Receptor	Annual mean PM10 results		
3-217	Negligible	Negligible	Negligible
3-218	Negligible	Negligible	Negligible
3-219	Negligible	Negligible	Negligible
3-220	Negligible	Negligible	Negligible
3-221	Negligible	Negligible	Negligible
3-222	Negligible	Negligible	Negligible
3-223	Negligible	Negligible	Negligible
3-224	Negligible	Negligible	Negligible
3-225	Negligible	Negligible	Negligible
3-226	Negligible	Negligible	Negligible
3-227	Negligible	Negligible	Negligible
3-228	Negligible	Negligible	Negligible
3-E	Negligible	Negligible	Negligible

Assessment of significance

2.3.9 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES. Air quality management areas (AQMA) cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.3.10 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the revised scheme. Many assessed receptor locations will also experience an increase in annual mean concentrations of NO2 and PM10 with the AP3 revised scheme. For some of the assessed receptor locations the impacts on NO2 concentration will be substantial or adverse, using the revised assessment methodology. These will be new significant effects. There are no reported significant effects for PM10.

2.3.11 The construction vehicle flows at peak periods and consequential changes to general traffic flows in CFA3 will give rise to significant effects on NO2 concenations at a number of assessed receptors.

2.3.12 Overall, given the factors above, air quality effects are considered to be significant, although limited in spatial extent to locations close to affected roads.

2.4 Stage B1 construction and operation (2026-2033)

2.4.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

2.4.2 One peak traffic scenario has been assessed during the Stage B1 combined construction and operational period. Its assessment assumes 2026 vehicle emission rates and 2026 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in the stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. This scenario has been assessed against the future baseline case without the revised scheme.

Receptors assessed

2.4.3 The receptor assessed is listed in Table 10.

Table 10 : Modelled receptors (Stage B1 construction and operation)

Receptor	Description/location	Ordnance Survey (OS) coordinates
3-49	1 Prince Albert Road	528605, 183577

Background concentrations

2.4.4 The background concentrations used in the assessment are shown in Table 11 taken from the Defra maps.

Table 11 : Background 2012 and 2026 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(3-49) 1 Prince Albert Road	59.9	36.1	23.7	36.8	23.9	21.1

Detailed modelling results

2.4.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance (Tables 12- 14). As a comparison, the impact descriptor using the previous EPUK guidance has also been provided along with what was reported in the main ES. Results presented correspond to the greatest impact at each receptor from the peak construction year assessed.

Table 12 : Summary of annual mean NO_2 results (Stage B1 construction and operation)

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-49	55.0	31.0	31.0	0.0	Negligible	Negligible	N/A

Table 13 : Summary of annual mean PM10 results (Stage B1 construction and operation)

Receptor	PM10 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-49	25.9	22.5	22.5	0.0	Negligible	Negligible	N/A

Table 14 : Summary of 24-hour mean PM10 results (Stage B1 construction and operation)

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
3-49	15	7	7	0	Negligible	Negligible	N/A

2.5 Assessment of significance

2.5.1 The significance of the impacts on air quality from construction traffic associated with the AP3 revised scheme has been assessed in accordance with the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES. AQMAs cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.5.2 The assessment predicted that there will be no locations where air quality standards are exceeded, with and without the revised scheme and that any impact will be negligible.

2.5.3 Overall, air quality effects are not considered to be significant.

3 References

Department for Environment, Food and Rural Affairs (Defra), (2011), *Defra background maps 2011*; http://laqm.defra.gov.uk/maps/maps2010.html; Accessed: September 2014.

Department for Environment, Food and Rural Affairs, (2009), *Technical Guidance Note LAQM TG(09).*

Department of Food Environment and Rural Affairs, (2007), *The Air Quality Strategy for England, Scotland, Wales and Northern Ireland*, Her Majesty's Stationery Office.

Environment Agency, *What's in your Backyard?;* http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

Environmental Protection UK, (2010), *Development Control: Planning for Air Quality (2010). Greater London Authority* (2011) The London Plan: Spatial Development Strategy for Greater London, Greater London Authority, London.

Greater London Authority, (2010), *Clearing the Air: The Mayor's Air Quality Strategy*, GLA, London.

Greater London Authority2010), *London Atmospheric Emissions Inventory 2008 Concentration Maps;* http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.

Greater London Authority, (2010), *Draft Climate Change Adaptation Strategy for London*, GLA, London.

Greater London Authority, (2006), *Sustainable Design and Construction: The London Plan Supplementary Planning Guidance*, Greater London Authority, London.

Highways Agency, (2007), *The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07*.

Moorcroft and Barrowcliffe et al, (2015), *Land-Use Planning and Development Control: Planning for Air Quality*, London: Institute of Air Quality Management.

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 2 and Additional Provision 3 Environmental Statement

Volume 5 | Technical appendices

Air quality

AQ-001-004

Environmental topic:	Air quality	AQ
Appendix name:	Data appendix	001
Community forum area:	Kilburn (Brent) to Old Oak Common	004

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1 Introduction

1.1 Structure of this air quality assessment appendix

1.1.1 This appendix provides an update to Appendix AQ-001-004 of the main Environmental Statement (ES) (Volume 5, Appendix AQ-001-004). This update should be read in conjunction with Appendix AQ-001-004 of the main ES.

1.1.2 This appendix is structured as follows: air quality assessment - road traffic (Section 2).

1.1.3 Maps referred to throughout this air quality appendix are contained in the Volume 5 Air Quality Map Book, within this Supplementary Environmental Statement 2 (SES2) and Additional Provision 3 ES (AP3 ES).

1.2 Scope of this assessment

1.2.1 This air quality assessment considers changes to local air quality as a result of:

- changes to the design assumptions which do not require changes to the Bill;
- changes to the design of the scheme that are outside the existing limits of the Bill (i.e. AP3 amendments); and
- updates to traffic models.

Methodology, data sources and design criteria

1.2.2 The assessment scope, key assumptions and limitations for air quality are set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES.

2 Air quality assessment - road traffic

2.1 Overall assessment approach

2.1.1 The overall assessment approach remains the same as described in Appendix AQ-001-004 of the main ES. Where changes to this approach have been employed, these are detailed in Section 2.2.

2.1.2 As detailed in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, since the publication of the main ES, the Environmental Protection UK (EPUK) and the Institute of Air Quality Management (IAQM) have issued new guidance[1] on assessing the impact of traffic emissions, which introduces a new set of impact descriptors. The 2015 IAQM/EPUK guidance differs from the previous 2010 guidance[2], which was used in the main ES, in that it treats a similar increase in ambient pollution concentrations as having a greater impact, and therefore more likely to have a significant effect. Where applicable, a comparison has

[1] Moorcroft and Barrowcliffe et al, (2015) Land-Use Planning and Development Control: Planning for Air Quality, *London: Institute of Air Quality Management.*
[2] EPUK, (2010), Development Control: Planning for Air Quality.

been provided in the results tables between the new impact descriptors, those that would arise if the previous guidance was used and what was reported in the main ES.

2.2 Model inputs and verification

Model verification

2.2.1 Model verification for construction traffic relating to Euston is detailed below. Model verification for operational traffic is unchanged since the SES and AP2 ES.

2.2.2 Since the model predicts NOx contributions for the modelled roads, this was initially compared to the NOx road contribution derived from NOx concentrations (where available) measured at monitoring sites and Department of Environment, Food and Rural Affairs (Defra) background maps.

2.2.3 Roadside monitoring sites were chosen from across the traffic model area, which extends both west and north of the study area. This allowed a greater number of sites to be included in the verification. Sites where nearby busy roads were not included in the traffic model data set (and which, therefore, could not be modelled correctly as roadside sites with the traffic data set) were excluded from assessment. The results of this comparison are shown in Table 1.

Table 1 : Comparison of monitored and modelled NOx concentrations for verification

Site	Monitored total NO2 (µg/m^3)	Monitored total NOx (µg/m^3)	Background NO2 (µg/m^3)	Background NOx (µg/m^3)	Monitored road NOx (µg/m^3)	Modelled road NOx (µg/m^3)
London Borough of Camden (LBC) - Euston Road (Automatic Urban and Rural Network (AURN))	106.1	350.0	47.8	84.3	58.3	265.7
LBC - Shaftesbury Avenue (AURN)	71.2	163.0	53.7	97.0	17.5	66.0
LBC - Euston Road	82.1	N/A	47.8	83.7	34.3	110.0
LBC - Kentish Town Road	59.0	N/A	33.9	55.5	25.1	67.7
LBC - 47 Fitzjohn's Avenue	61.2	N/A	32.5	52.7	28.7	79.0
LBC - Bloomsbury Street	71.6	N/A	51.0	92.6	20.6	61.2
LBC - Camden Road	67.4	N/A	37.1	62.2	30.3	87.4
LBC - Chetwynd Road	43.7	N/A	31.7	51.3	12.0	28.4
LBC - Mill Lane/ West	52.0	N/A	32.4	52.6	19.6	49.9

Site	Monitored total NO2 (µg/m3)	Monitored total NOx (µg/m3)	Background NO2 (µg/m3)	Background NOx (µg/m3)	Monitored road NOx (µg/m3)	Modelled road NOx (µg/m3)
End Lane						
LBC - Swiss Cottage	72.7	N/A	37.4	62.9	35.3	106.1

2.2.4 The calculated model adjustment factor for the road contribution of NOx was 2.19. This factor is the gradient of the straight line function obtained by plotting the modelled NOx concentrations versus the (unadjusted) monitored NOx concentrations. This was applied to all NOx results from the ADMS-Roads modelling. This is line with Defra guidance[3] on model verification.

2.2.5 A final check was then made to compare the total NO2 concentrations from the modelling to the monitored data. This is shown in Table 2.

Table 2 : Comparison of monitored and modelled annual average NO2 concentrations

Site	Monitored concentration (µg/m3)	Modelled concentration (µg/m3)	Difference ((modelled - monitored)/monitored) x 100
LBC - Euston Road (AURN)	106.1	82.8	-21.9%
LBC - Shaftesbury Avenue (AURN)	71.2	70.9	-0.5%
LBC - Euston Road	82.1	95.3	16.1%
LBC - Kentish Town Road	59.0	61.4	4.2%
LBC - 47 Fitzjohn's Avenue	61.2	38.5	-37.2%
LBC - Bloomsbury Street	71.6	85.8	19.8%
LBC - Camden Road	67.4	71.2	5.6%
LBC - Chetwynd Road	43.7	39.2	-10.2%
LBC - Mill Lane/ West End Lane	52.0	49.4	-5.2%
LBC - Swiss Cottage	72.7	77.5	6.7%

2.2.6 As there was no consistent under- or over-prediction and the majority of modelled NO2 concentrations were within 25% of the monitored concentrations, no further adjustment was undertaken.

[3] Department for Environment, Food and Rural Affairs (2009) Technical Guidance Note LAQM TG(09).

2.3 Construction (2017-2026)

2.3.1 Construction traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

2.3.2 Three peak construction traffic scenarios, described in Volume 2 Section 3.9, have been assessed during the 2017-2026 construction period. Although the three scenarios assessed occur in different years, their assessment assumes a pessimistic approach with 2017 vehicle emission rates and 2017 background pollutant concentrations. The reason for this is that both pollutant emissions from exhausts and background pollutant concentrations are expected to reduce year by year as a result of vehicle emission controls and so the earliest year in each stage represents a conservative approach for the assessment. Furthermore, it has been assumed that the changes in construction traffic will occur for the whole year. In many cases, this represents a pessimistic assumption, as the duration of the peak traffic flows may be much shorter. These scenarios have been assessed against the relevant future baseline cases without the AP3 revised scheme.

Receptors assessed

2.3.3 Receptors assessed are listed in Table 3.

Table 3 : Modelled receptors (2017-2026 construction phase)

Receptor	Description/location	Ordnance Survey (OS) coordinates
4-65	Cunningham Court, Edgware Road	526552, 182213
4-67	379 Edgware Road	526763, 182005
4-68	283 Edgware Road	526964, 181798
4-276	431-433 Edgware Road	526621, 182148
4-277	361 Edgware Road	526794, 181970
4-278	Gilbert Sheldon House, Edgware Road	526849, 181898
4-279	449 Edgware Road	526583, 182181

Background concentrations

2.3.4 The background concentrations used in the assessment are shown in Table 4 and taken from the Defra maps.

Table 4 : Background 2012 and 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(4-65) Cunningham Court, Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2017		
	NOx	NO2	PM10	NOx	NO2	PM10
(4-67) 379 Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9
(4-68) 283 Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(4-276) 431-433 Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9
(4-277) 361 Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(4-278) Gilbert Sheldon House, Edgware Road	82.0	46.6	26.2	69.3	40.1	24.4
(4-279) 449 Edgware Road	66.1	38.9	24.5	55.7	33.7	22.9

Detailed modelling results

2.3.5 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor derived using the approach in the previous EPUK guidance has also been provided, together with that reported in the main ES. Results presented correspond to the greatest impact at each receptor from the three scenarios assessed.

2.3.6 As set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, Environmental Protection UK (EPUK) and the IAQM have issued new guidance[4] on assessing air quality impacts. The main difference from the previous guidance is that it describes a similar increase in pollutant concentrations as having greater adverse impact, and therefore having a greater potential for significant effects. For example, where the baseline NO2 concentration is under the standard at 38µg/m^3 and increases by 1.5µg/m^3 to 39.5µg/m^3 with the scheme, the previous guidance defined this as a slight adverse impact, while the new guidance defines this as a moderate adverse impact. The increased emphasis on severity in the descriptors in the new guidance is particularly accentuated for receptors where baseline concentrations are at or above the objective value, as is the case in parts of London. This is illustrated in the results in Table 5. The 6th column shows the impact descriptor using the 2015 guidance, and the 7th column shows the impact descriptor using the 2010 guidance. It can be seen that more of the descriptors using the 2015 guidance are moderate or substantial than with the 2010 guidance, for the same change in annual mean NO2 concentration.

[4] Moorcroft and Barrowcliffe et al., (2015), Land-Use Planning and Development Control: Planning for Air Quality. London: Institute of Air Quality Management.

Table 5 : Summary of annual mean NO2 results (2017-2026 construction phase)

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-65	64.2	54.1	54.4	0.2	Moderate adverse	Negligible	Slight adverse
4-67	68.2	57.4	57.4	0.0	Negligible	Negligible	Moderate adverse
4-68	84.6	71.9	71.9	0.0	Negligible	Negligible	Moderate adverse
4-276	63.4	53.4	53.4	0.0	Negligible	Negligible	N/A
4-277	71.5	60.8	60.8	0.0	Negligible	Negligible	N/A
4-278	65.1	55.4	55.5	0.0	Negligible	Negligible	N/A
4-279	63.3	53.4	53.4	0.1	Negligible	Negligible	N/A

Table 6 : Summary of annual mean PM10 results (2017-2026 construction phase)

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-65	27.5	25.4	25.4	0.0	Negligible	Negligible	Negligible
4-67	27.8	25.7	25.7	0.0	Negligible	Negligible	Negligible
4-68	31.5	28.8	28.9	0.0	Negligible	Negligible	Negligible
4-276	27.1	25.1	25.1	0.0	Negligible	Negligible	N/A
4-277	29.2	26.9	26.9	0.0	Negligible	Negligible	N/A
4-278	28.3	26.2	26.2	0.0	Negligible	Negligible	N/A
4-279	27.2	25.1	25.2	0.0	Negligible	Negligible	N/A

Table 7 : Summary of 24-hour mean PM10 results (2017-2026 A construction phase)

Receptor	Number of days exceeding PM10 24-hour standard			Change in days	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-65	19	13	13	0	Negligible	Negligible	Negligible
4-67	20	14	14	0	Negligible	Negligible	Negligible
4-68	33	23	23	0	Negligible	Negligible	Negligible
4-276	18	13	13	0	Negligible	Negligible	N/A
4-277	25	17	17	0	Negligible	Negligible	N/A
4-278	22	15	15	0	Negligible	Negligible	N/A
4-279	18	13	13	0	Negligible	Negligible	N/A

2.3.7 As detailed in paragraph 2.3.2, three peak construction scenarios were used in the assessment of the 2017-2026 construction phase. The following tables provide a comparison of the resulting impact descriptors across these scenarios.

Table 8 : Comparison of annual mean NO_2 results across peak construction scenarios (2017-2026 construction phase)

Receptor	Annual mean NO_2 results		
	Test 1 impact descriptor	Test 2 impact descriptor	Test 3 impact descriptor
4-65	Negligible	Moderate beneficial	Moderate adverse
4-67	Moderate beneficial	Negligible	Negligible
4-68	Negligible	Negligible	Negligible
4-276	Moderate beneficial	Negligible	Negligible
4-277	Negligible	Negligible	Negligible
4-278	Negligible	Negligible	Negligible
4-279	Moderate beneficial	Negligible	Negligible

Assessment of significance

2.3.8 The significance of the impacts on air quality from construction traffic associated with the revised scheme has been assessed in accordance with the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES. Air quality management

areas (AQMA) cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.3.9 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the revised scheme. Receptor locations will also experience an increase in concentrations of NO2 and PM10 with the revised scheme. The impacts at one of the assessed receptors will be moderate adverse for NO2 using the revised assessment methodology and there will be a new significant effect as a result. This change results from the change in methodology. Significant adverse effects predicted in the main ES for NO2 at two assessed receptors on Edgware Road are removed.

2.3.10 No significant effects for PM10 are reported.

2.3.11 Overall, given the factors above, air quality effects are considered to be significant, although limited in spatial extent.

2.4 Operational traffic

2.4.1 Operational traffic data used in this assessment are detailed in Volume 5 ES Appendix TR-001-000.

Receptors assessed

2.4.2 Receptors assessed are listed in Table 9.

Table 9 : Modelled receptors (operational phase)

Receptor	Description/location	OS coordinates
4-12	2 Victoria Terrace, Old Oak Lane	521445, 182474
4-16	84 Shaftesbury Gardens	521416, 182456
4-18	Holbrook House, Victoria Road	520926, 181878
4-19	116 Wales Farm Road	520887, 181753
4-47	98 Shaftesbury Gardens	521434, 182423
4-53	1 Park Royal Road	520594, 181831
4-55	96 Wales Farm Road	520839, 181701
4-70	The Castle Public House, Victoria Road	520912, 181837
4-73	Lewis House, Victoria Road	521044, 182115
4-85	245 Wulfstan Street	521521, 181541
4-86	240 Old Oak Common Lane	521476, 181484
4-93	167 Wells House Road	521307, 182090

Receptor	Description/location	OS coordinates
4-95	2 Western Avenue	521573, 180911
4-96	76 Old Oak Common Lane	521613, 180922
4-125	142 Western Avenue	521014, 181065
4-134	114-120 Victoria Road	520988, 182044
4-143	3 Wells House Road	521311, 182039
4-144	Park Lodge, Old Oak Common Lane	521512, 181597
4-145	240 Wulfstan Street	521552, 181540
4-149	49 Wells House Road	521340, 181910
4-150	51 Wells House Road	521342, 181900
4-151	36 Wales Farm Road	520719, 181593
4-152	23 The Approach	520943, 181114
4-153	127 Perryn Road	520921, 181078
4-154	108 Western Avenue	521137, 180997
4-155	207-209 Old Oak Road	521610, 180861
4-156	74 Old Oak Common Lane	521624, 180914
4-266	Poulton Court, Victoria Road	520768, 181832
4-267	48A Western Avenue	521413, 180916
4-268	187 Old Oak Common Lane	521448, 181497

Background concentrations

2.4.3 The background concentrations used in the assessment are shown in Table 10 taken from the Defra maps.

Table 10 : Background 2012 and 2026 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(4-12) 2 Victoria Terrace, Old Oak Lane	59.9	34.7	22.9	41.5	25.8	20.5

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(4-16) 84 Shaftesbury Gardens	59.9	34.7	22.9	41.5	25.8	20.5
(4-18) Holbrook House, Victoria Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-19) 116 Wales Farm Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-47) 98 Shaftesbury Gardens	59.9	34.7	22.9	41.5	25.8	20.5
(4-53) 1 Park Royal Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-55) 96 Wales Farm Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-70) The Castle Public House, Victoria Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-73) Lewis House, Victoria Road	59.9	34.7	22.9	41.5	25.8	20.5
(4-85) 245 Wulfstan Street	49.8	30.9	21.9	32.7	21.6	19.6
(4-86) 240 Old Oak Common Lane	49.8	30.9	21.9	32.7	21.6	19.6
(4-93) 167 Wells House Road	59.9	34.7	22.9	41.5	25.8	20.5
(4-95) 2 Western Avenue	57.0	34.1	24.3	34.7	22.5	21.8
(4-96) 76 Old Oak Common Lane	57.0	34.1	24.3	34.7	22.5	21.8
(4-125) 142 Western Avenue	49.8	30.9	21.9	32.7	21.6	19.6
(4-134) 114-120 Victoria Road	63.0	36.2	24.6	42.6	26.4	22.0
(4-143) 3 Wells House Road	59.9	34.7	22.9	41.5	25.8	20.5
(4-144) Park Lodge, Old Oak Common Lane	49.8	30.9	21.9	32.7	21.6	19.6
(4-145) 240 Wulfstan Street	49.8	30.9	21.9	32.7	21.6	19.6
(4-149) 49 Wells House Road	49.8	30.9	21.9	32.7	21.6	19.6
(4-150) 51 Wells House Road	49.8	30.9	21.9	32.7	21.6	19.6
(4-151) 36 Wales Farm Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-152) 23 The Approach	64.7	37.3	24.7	42.0	26.2	22.1
(4-153) 127 Perryn Road	64.7	37.3	24.7	42.0	26.2	22.1

Receptor (or zone of receptors)	Concentrations (µg/m^3)					
	2012			2026		
	NOx	NO2	PM10	NOx	NO2	PM10
(4-154) 108 Western Avenue	57.0	34.1	24.3	34.7	22.5	21.8
(4-155) 207-209 Old Oak Road	57.0	34.1	24.3	34.7	22.5	21.8
(4-156) 74 Old Oak Common Lane	57.0	34.1	24.3	34.7	22.5	21.8
(4-266) Poulton Court, Victoria Road	64.7	37.3	24.7	42.0	26.2	22.1
(4-267) 48A Western Avenue	57.0	34.1	24.3	34.7	22.5	21.8
(4-268) 187 Old Oak Common Lane	49.8	30.9	21.9	32.7	21.6	19.6

Detailed modelling results

2.4.4 This section presents the summary of the modelled pollutant concentrations for the assessed receptors and the resulting impact descriptor following the latest IAQM/EPUK guidance. As a comparison, the impact descriptor using the previous EPUK guidance has also been provided along with what was reported in the main ES.

2.4.5 As set out in Volume 1 and the SMR Addendum 3 (Volume 5: Appendix CT001-000/4) of the SES2 and AP3 ES, Environmental Protection UK (EPUK) and the IAQM have issued new guidance[5] on assessing air quality impacts. The main difference from the previous guidance is that it describes a similar increase in pollutant concentrations as having greater adverse impact, and therefore having a greater potential for significant effects. For example, where the baseline NO2 concentration is under the standard at 38µg/m^3 and increases by 1.5µg/m^3 to 39.5µg/m^3 with the scheme, the previous guidance defined this as a slight adverse impact, while the new guidance defines this as a moderate adverse impact. The increased emphasis on severity in the descriptors in the new guidance is particularly accentuated for receptors where baseline concentrations are at or above the objective vaue, as is the case in parts of London. This is illustrated in the results in Table 11. The 6th column shows the impact descriptor using the 2015 guidance, and the 7th column shows the impact descriptor using the 2010 guidance. It can be seen that more of the descriptors using the 2015 guidance are moderate or substantial than with the 2010 guidance, for the same change in annual mean NO2 concentration.

[5] Moorcroft and Barrowcliffe et al., (2015), Land-Use Planning and Development Control: Planning for Air Quality. London: Institute of Air Quality Management.

Table 11 : Summary of annual mean NO2 results (operational phase)

Receptor	NO2 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-12	65.8	53.6	53.6	0.0	Negligible	Negligible	Moderate adverse
4-16	61.7	50.9	50.9	0.0	Negligible	Negligible	N/A
4-18	56.7	48.7	48.9	0.2	Negligible	Negligible	N/A
4-19	68.4	59.2	59.2	0.0	Negligible	Negligible	N/A
4-47	52.8	44.1	44.1	0.0	Negligible	Negligible	N/A
4-53	73.0	61.9	62.1	0.2	Negligible	Negligible	N/A
4-55	65.6	56.9	56.9	0.0	Negligible	Negligible	N/A
4-70	60.4	51.8	51.9	0.2	Negligible	Negligible	N/A
4-73	52.3	45.9	45.9	0.0	Negligible	Negligible	N/A
4-85	45.2	38.0	38.3	0.4	Slight adverse	Negligible	N/A
4-86	59.4	49.1	51.2	2.1	Substantial adverse	Moderate adverse	N/A
4-93	57.3	48.1	48.2	0.0	Negligible	Negligible	N/A
4-95	93.6	78.3	78.3	0.0	Negligible	Negligible	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-96	86.8	73.9	74.0	0.1	Negligible	Negligible	N/A
4-125	82.9	68.5	68.5	0.0	Negligible	Negligible	N/A
4-134	51.0	44.7	44.7	0.1	Negligible	Negligible	N/A
4-143	53.8	46.1	46.2	0.1	Negligible	Negligible	N/A
4-144	44.3	37.5	37.7	0.2	Negligible	Negligible	N/A
4-145	43.5	36.7	36.9	0.2	Negligible	Negligible	N/A
4-149	45.1	38.6	38.6	0.0	Negligible	Negligible	N/A
4-150	44.9	38.3	38.4	0.0	Negligible	Negligible	N/A
4-151	73.7	63.7	63.8	0.1	Negligible	Negligible	N/A
4-152	85.0	70.7	70.7	0.0	Negligible	Negligible	N/A
4-153	71.7	60.0	60.1	0.0	Negligible	Negligible	N/A
4-154	83.8	69.3	69.3	0.0	Negligible	Negligible	N/A
4-155	91.0	77.6	77.7	0.1	Negligible	Negligible	N/A
4-156	95.0	80.1	80.2	0.1	Negligible	Negligible	N/A

Receptor	NO_2 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-266	57.6	49.2	49.3	0.1	Negligible	Negligible	N/A
4-267	85.9	71.0	71.0	0.0	Negligible	Negligible	N/A
4-268	46.9	39.1	39.8	0.7	Moderate adverse	Slight adverse	N/A

Table 12 : Summary of annual mean PM10 results (operational phase)

Receptor	PM10 concentrations ($\mu g/m^3$)			Change in concentrations ($\mu g/m^3$)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-12	26.8	23.8	23.8	0.0	Negligible	Negligible	Negligible
4-16	26.2	23.4	23.4	0.0	Negligible	Negligible	N/A
4-18	26.9	24.1	24.1	0.0	Negligible	Negligible	N/A
4-19	28.6	25.5	25.5	0.0	Negligible	Negligible	N/A
4-47	24.8	22.1	22.1	0.0	Negligible	Negligible	N/A
4-53	30.7	27.2	27.2	0.0	Negligible	Negligible	N/A
4-55	28.4	25.4	25.4	0.0	Negligible	Negligible	N/A
4-70	27.3	24.3	24.4	0.0	Negligible	Negligible	N/A
4-73	25.0	22.5	22.5	0.0	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-85	23.3	20.7	20.8	0.0	Negligible	Negligible	N/A
4-86	24.9	22.1	22.1	0.1	Negligible	Negligible	N/A
4-93	25.6	22.8	22.8	0.0	Negligible	Negligible	N/A
4-95	35.9	31.4	31.4	0.0	Negligible	Negligible	N/A
4-96	33.9	29.8	29.8	0.0	Negligible	Negligible	N/A
4-125	32.0	28.0	28.0	0.0	Negligible	Negligible	N/A
4-134	26.2	23.6	23.6	0.0	Negligible	Negligible	N/A
4-143	25.1	22.5	22.5	0.0	Negligible	Negligible	N/A
4-144	23.2	20.7	20.7	0.0	Negligible	Negligible	N/A
4-145	23.1	20.6	20.6	0.0	Negligible	Negligible	N/A
4-149	23.4	21.0	21.0	0.0	Negligible	Negligible	N/A
4-150	23.4	20.9	20.9	0.0	Negligible	Negligible	N/A
4-151	30.3	26.9	26.9	0.0	Negligible	Negligible	N/A
4-152	34.4	30.2	30.2	0.0	Negligible	Negligible	N/A

Receptor	PM10 concentrations (µg/m^3)			Change in concentrations (µg/m^3)	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-153	30.9	27.4	27.4	0.0	Negligible	Negligible	N/A
4-154	33.9	29.8	29.8	0.0	Negligible	Negligible	N/A
4-155	35.1	30.8	30.8	0.0	Negligible	Negligible	N/A
4-156	36.8	32.3	32.3	0.0	Negligible	Negligible	N/A
4-266	27.2	24.2	24.2	0.0	Negligible	Negligible	N/A
4-267	34.4	30.2	30.2	0.0	Negligible	Negligible	N/A
4-268	23.3	20.8	20.8	0.0	Negligible	Negligible	N/A

Table 13 : Summary of 24-hour mean PM10 results (operational phase)

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-12	17	10	10	0	Negligible	Negligible	Negligible
4-16	16	9	9	0	Negligible	Negligible	N/A
4-18	17	10	10	0	Negligible	Negligible	N/A
4-19	23	14	14	0	Negligible	Negligible	N/A
4-47	12	7	7	0	Negligible	Negligible	N/A

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-53	30	18	18	0	Negligible	Negligible	N/A
4-55	22	13	13	0	Negligible	Negligible	N/A
4-70	18	11	11	0	Negligible	Negligible	N/A
4-73	12	7	7	0	Negligible	Negligible	N/A
4-85	9	4	4	0	Negligible	Negligible	N/A
4-86	12	6	7	0	Negligible	Negligible	N/A
4-93	14	8	8	0	Negligible	Negligible	N/A
4-95	55	33	33	0	Negligible	Negligible	N/A
4-96	44	27	27	0	Negligible	Negligible	N/A
4-125	35	21	21	0	Negligible	Negligible	N/A
4-134	15	9	9	0	Negligible	Negligible	N/A
4-143	13	7	7	0	Negligible	Negligible	N/A
4-144	9	4	4	0	Negligible	Negligible	N/A
4-145	8	4	4	0	Negligible	Negligible	N/A

Receptor	Number of 24-hour mean PM10 exceedances			Change in number of 24-hour mean PM10 exceedances	Impact descriptor	Impact descriptor using the previous 2010 guidance	Impact descriptor reported in the main ES
	2012 baseline	Without scheme	With scheme				
4-149	9	5	5	0	Negligible	Negligible	N/A
4-150	9	5	5	0	Negligible	Negligible	N/A
4-151	29	17	17	0	Negligible	Negligible	N/A
4-152	46	28	28	0	Negligible	Negligible	N/A
4-153	31	19	19	0	Negligible	Negligible	N/A
4-154	44	27	27	0	Negligible	Negligible	N/A
4-155	50	30	30	0	Negligible	Negligible	N/A
4-156	60	37	37	0	Negligible	Negligible	N/A
4-266	18	11	11	0	Negligible	Negligible	N/A
4-267	47	28	28	0	Negligible	Negligible	N/A
4-268	9	4	4	0	Negligible	Negligible	N/A

Assessment of significance

2.4.6 The significance of the effects on air quality from operational traffic associated with the AP3 revised scheme has been assessed in accordance with the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES. AQMAs cover the study area, and pollution levels exceed air quality standards in many locations, particularly along major roads.

2.4.7 The assessment predicted that there will be numerous locations where air quality standards are exceeded, with and without the AP3 revised scheme. Almost no assessed receptor locations, however will also experience an increase in concentrations of NO2 or PM10 with the AP3 revised scheme sufficient to cause an adverse impact that gives rise to a new or different significant effect. The exception to this are two receptors on Old Oak Common Lane, where the impacts on NO2 concentrations are reported as moderate adverse and substantial adverse. Receptors on Old Oak Lane that were reported in the main ES as experiencing a significant adverse effect have now been removed. Only one of these receptors, receptor 4-12, required assessment for the AP3 revised scheme.

2.4.8 No significant effects on PM10 are reported.

3 References

Department for Environment, Food and Rural Affairs (Defra), (2011), Defra background maps 2011; http://laqm.defra.gov.uk/maps/maps2010.html; Accessed: September 2014.

Department for Environment, Food and Rural Affairs, (2009), Technical Guidance Note LAQM TG(09).

Department of Food Environment and Rural Affairs, (2007), The Air Quality Strategy for England, Scotland, Wales and Northern Ireland, Her Majesty's Stationery Office.

Environment Agency, What's in your Backyard?; http://www.environment-agency.gov.uk/wiyby; Accessed: August 2013.

Environmental Protection UK, (2010), Development Control: Planning for Air Quality (2010). Greater London Authority (GLA) (2011) The London Plan: Spatial Development Strategy for Greater London, GLA, London.

Greater London Authority,(2010), Clearing the Air: The Mayor's Air Quality Strategy, GLA, London.

Greater London Authority2010), London Atmospheric Emissions Inventory 2008 Concentration Maps; http://data.london.gov.uk/laei-2008-concentration-maps; Accessed: May 2013.

Greater London Authority,(2010), Draft Climate Change Adaptation Strategy for London, GLA, London.

Greater London Authority,(2006), Sustainable Design and Construction: The London Plan Supplementary Planning Guidance, GLA, London.

Highways Agency, (2007), The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07.

Moorcroft & Barrowcliffle et al, (2015), Land-Use Planning & Development Control: Planning for Air Quality, London: Institute of Air Quality Management.

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