



Module 6: Air Quality Local Assessment

Detailed Emissions Inventory & Dispersion Modelling
Figures Appendix

Prepared for the
Airports Commission

May 2015

Jacobs U.K. Limited

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Contents

Gatwick – 2R

Figure 4.1 – Principal Study Area and AQMA Boundaries– Gatwick 2R

Figure 4.2 – Wider Study Area – Gatwick 2R

Figure 4.3 – Traffic Simulation Area – Gatwick 2R

Figure 4.4 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) - 2009

Figure 4.5 – International and National Statutory Nature Conservation Designations

Figure 4.6 – Do-Minimum Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 4.7 – Gatwick 2R Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 4.8 – Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 4.9 – Source Apportionment Receptors Gatwick 2R

Figure 4.10 – Do-Minimum Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 4.11 – Gatwick 2R Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 4.12 – Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 4.13 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) – 2030

All at risk PCM links (>32ug/m³) within 2km of the airport boundary and at risk PCM links (>32ug/m³) within 200m of “Affected Roads”.

Heathrow - NWR

Figure 5.1 – Principal Study Area and AQMA Boundaries – Heathrow NWR

Figure 5.2 – Wider Study Area – Heathrow NWR

Figure 5.3 – Traffic Simulation Area – Heathrow NWR

Figure 5.4 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) - 2009

Figure 5.5 – International and National Statutory Nature Conservation Designations

Figure 5.6 – Do-Minimum Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 5.7 – Heathrow NWR Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 5.8 – Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 5.9 – Source Apportionment Receptors Heathrow NWR

Figure 5.10 – Do-Minimum Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 5.11 – Heathrow NWR Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 5.12 – Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 5.13 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) – 2030
All at risk PCM links (>32ug/m³) within 2km of the airport boundary and at risk PCM links (>32ug/m³) within 200m of “Affected Roads”.

Heathrow - ENR

Figure 6.1 – Principal Study Area and AQMA Boundaries – Heathrow ENR

Figure 6.2 – Wider Study Area – Heathrow ENR

Figure 6.3 – Traffic Simulation Area – Heathrow ENR

Figure 6.4 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) - 2009

Figure 6.5 – International and National Statutory Nature Conservation Designations

Figure 6.6 – Do-Minimum Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 6.7 – Heathrow ENR Predicted Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 6.8 – Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) – 2030

Figure 6.9 – Source Apportionment Receptors Heathrow ENR

Figure 6.10 – Do-Minimum Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 6.11 – Heathrow ENR Predicted Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 6.12 – Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

Figure 6.13 – PCM Annual Mean Roadside NO₂ Concentrations (ug/m³) – 2030
All at risk PCM links (>32ug/m³) within 2km of the airport boundary and at risk PCM links (>32ug/m³) within 200m of “Affected Roads”.

Appendix B

Figure B1 – MCAT Assignments Heathrow Baseline 2009. MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as shaded bar.

Figure B2 – MCAT Assignments Gatwick Baseline 2009 MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as shaded bar.

Figure B3 – MCAT Assignments Heathrow Do-Minimum, NWR and ENR MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as shaded bar.

Figure B4 – MCAT Assignments Gatwick Do-Minimum and 2R MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as shaded bar.

Appendix E

Figure E1 – Location of Monitoring Sites in Gatwick Study Area used for 2009 Model Verification

Figure E2 – Location of Monitoring Sites in Heathrow Study Area used for 2009 Model Verification

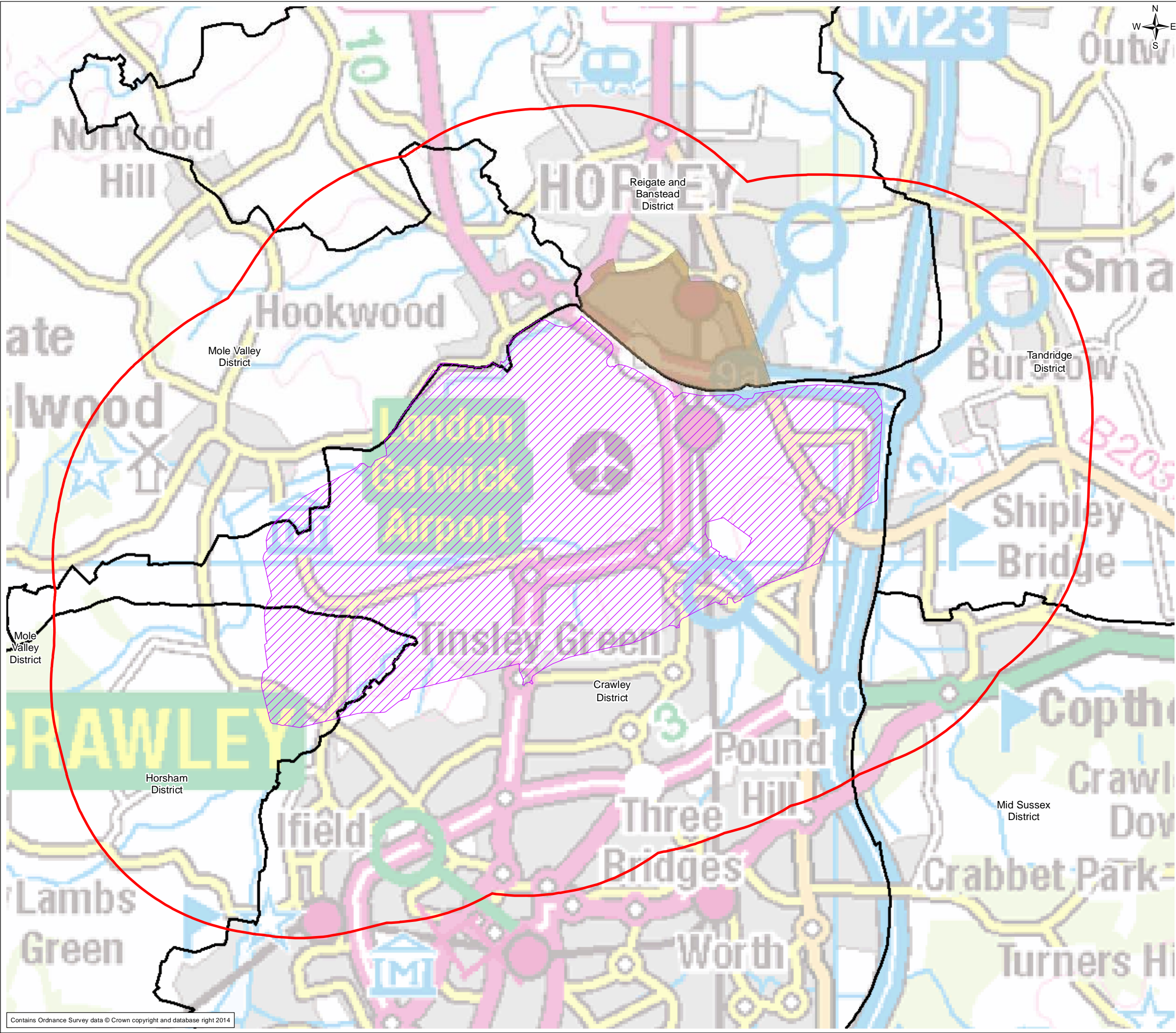






FIGURE 4.1

- Legend
-  Gatwick 2R boundary
 -  Principal study area
 -  Administrative boundaries
 -  Air Quality Management Areas

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Principal Study Area and AQMA Boundaries -
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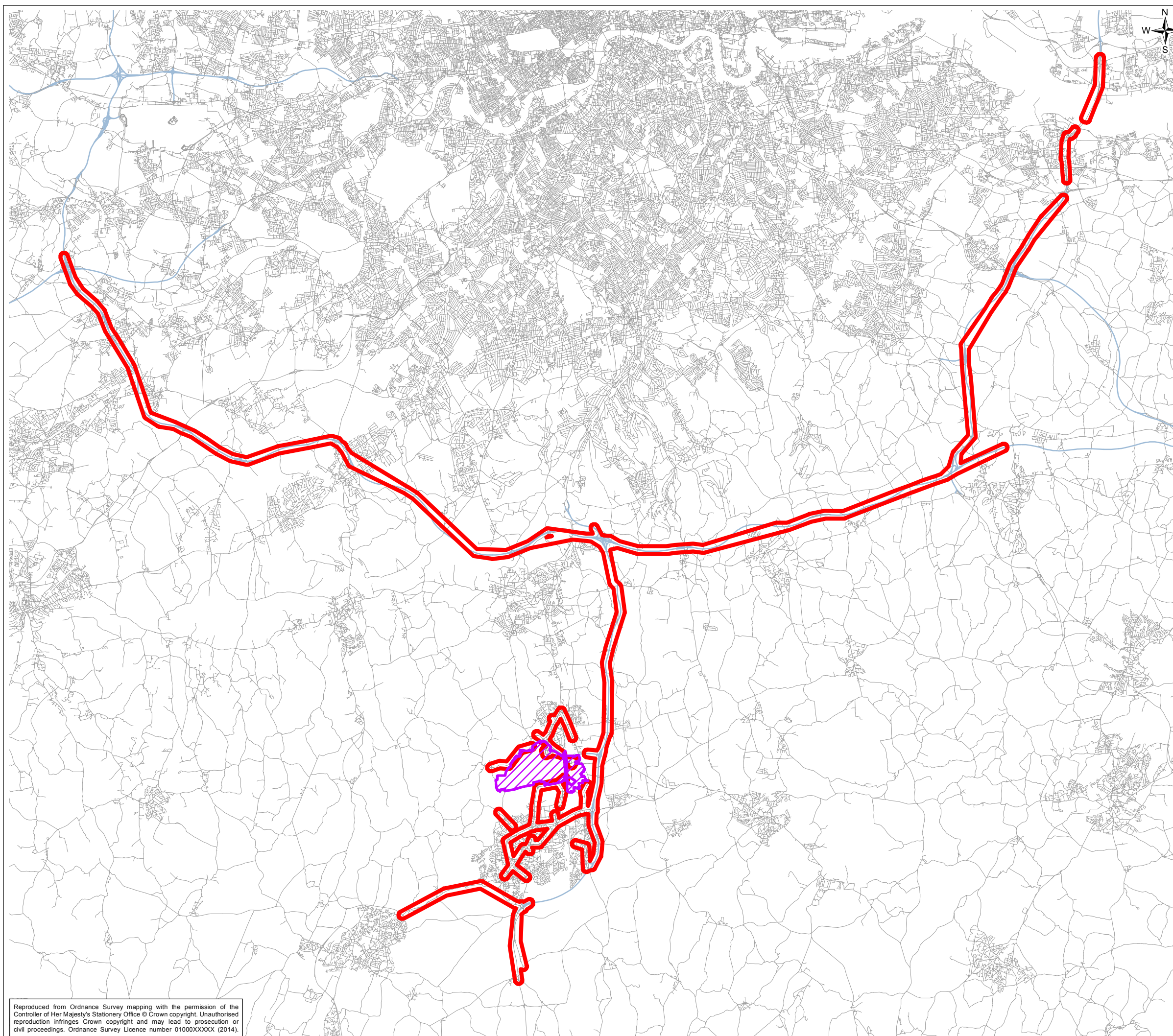


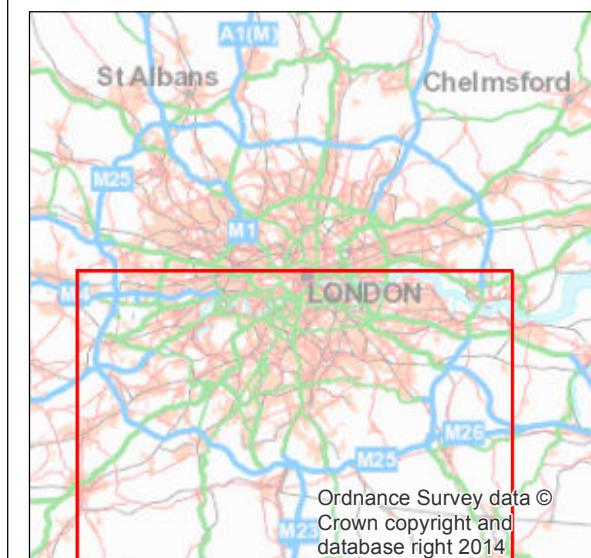




FIGURE 4.2

Legend

-  Gatwick Wider Study Area (Road Links Affected by the Scheme)
-  Gatwick Existing Boundary



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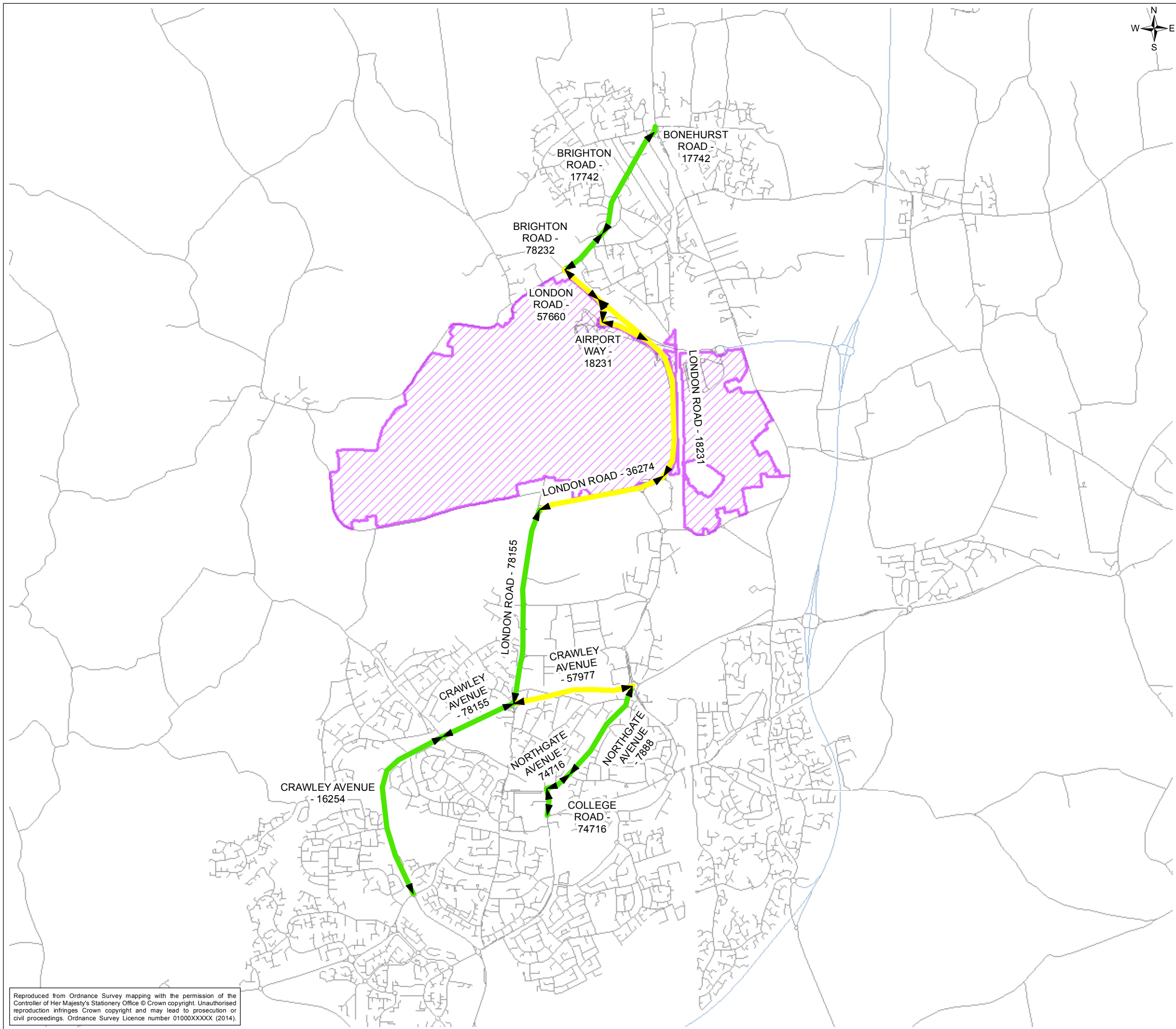


FIGURE 4.4

Legend

Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2009

32 - 40 At Risk of Exceeding the Limit Value

>40 Exceeding the Limit Value

Gatwick Existing Boundary

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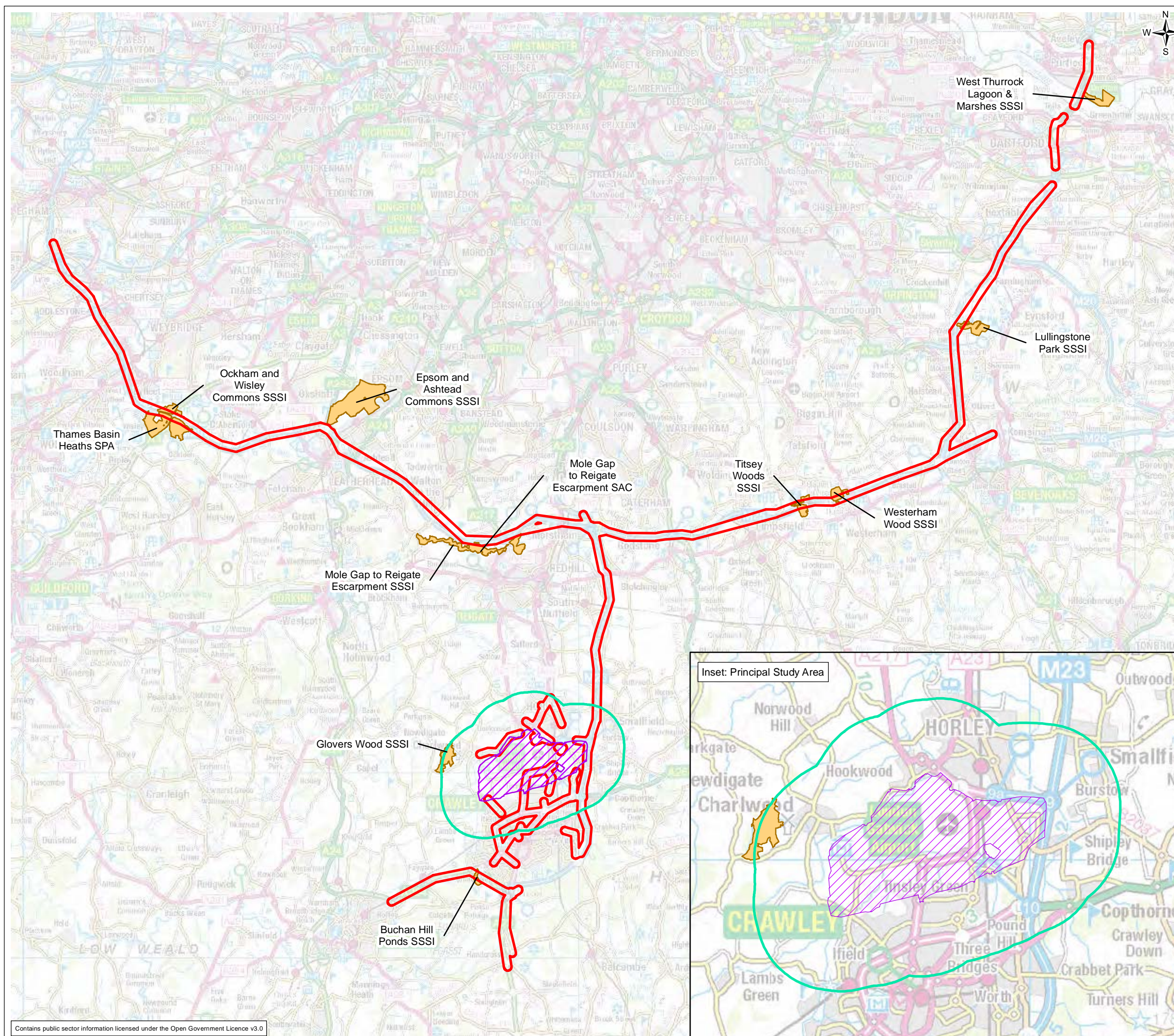








FIGURE 4.5

Legend

-  Gatwick 2R boundary
 Wider Study Area
 Principal Study Area
 Statutory Designated Nature Conservation sites of International/European and National importance*

*Explanatory note:
These sites include Ramsar sites, Special Areas of Conservation (SAC), Special Protection Areas (SPA), Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNR) where they are located within or adjacent to the Principal and Wider study areas (with the exception of sites identified as not sensitive to N deposition and NOx concentrations).

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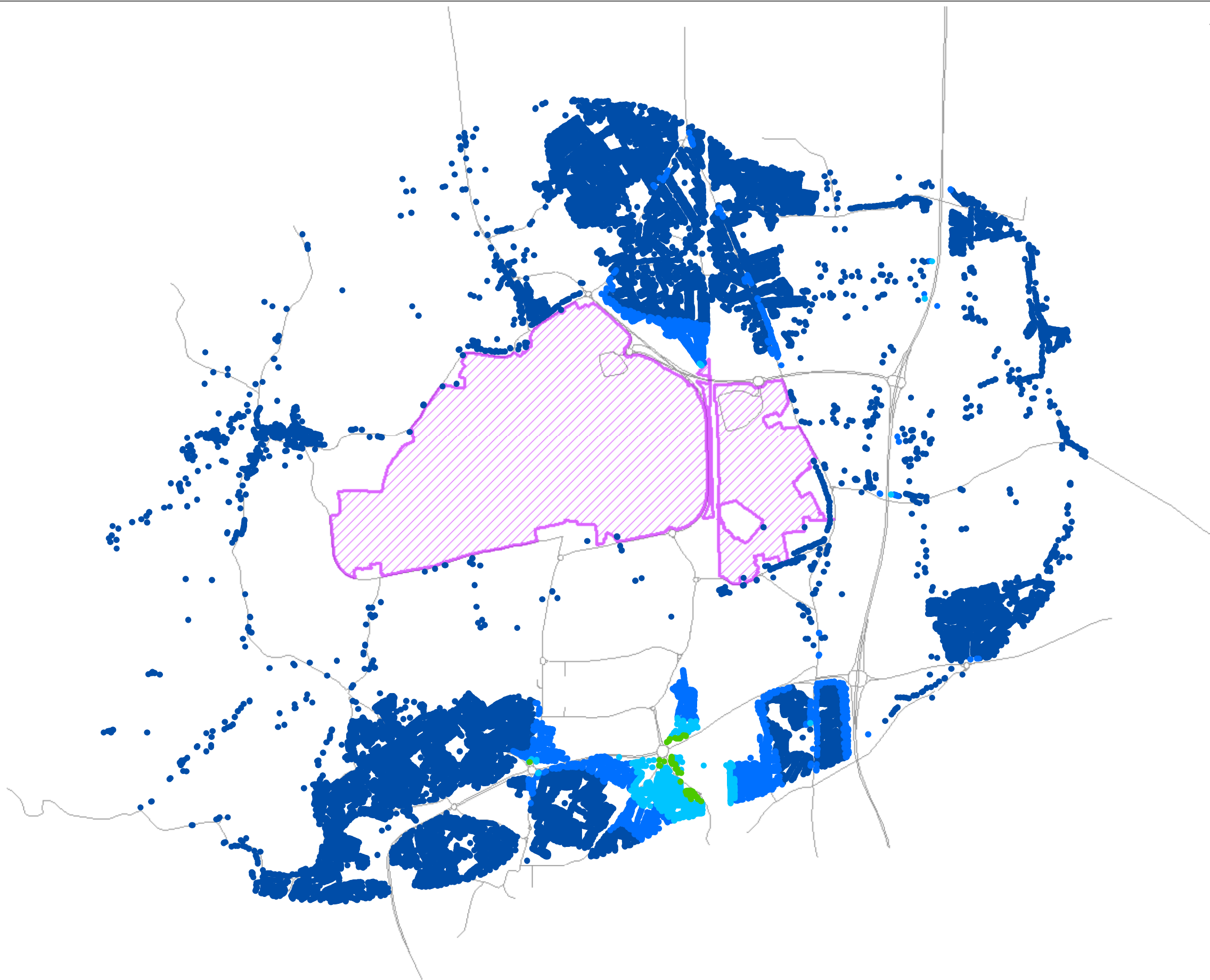



FIGURE 4.6


Legend

Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030

- < 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50

 Gatwick Existing Boundary



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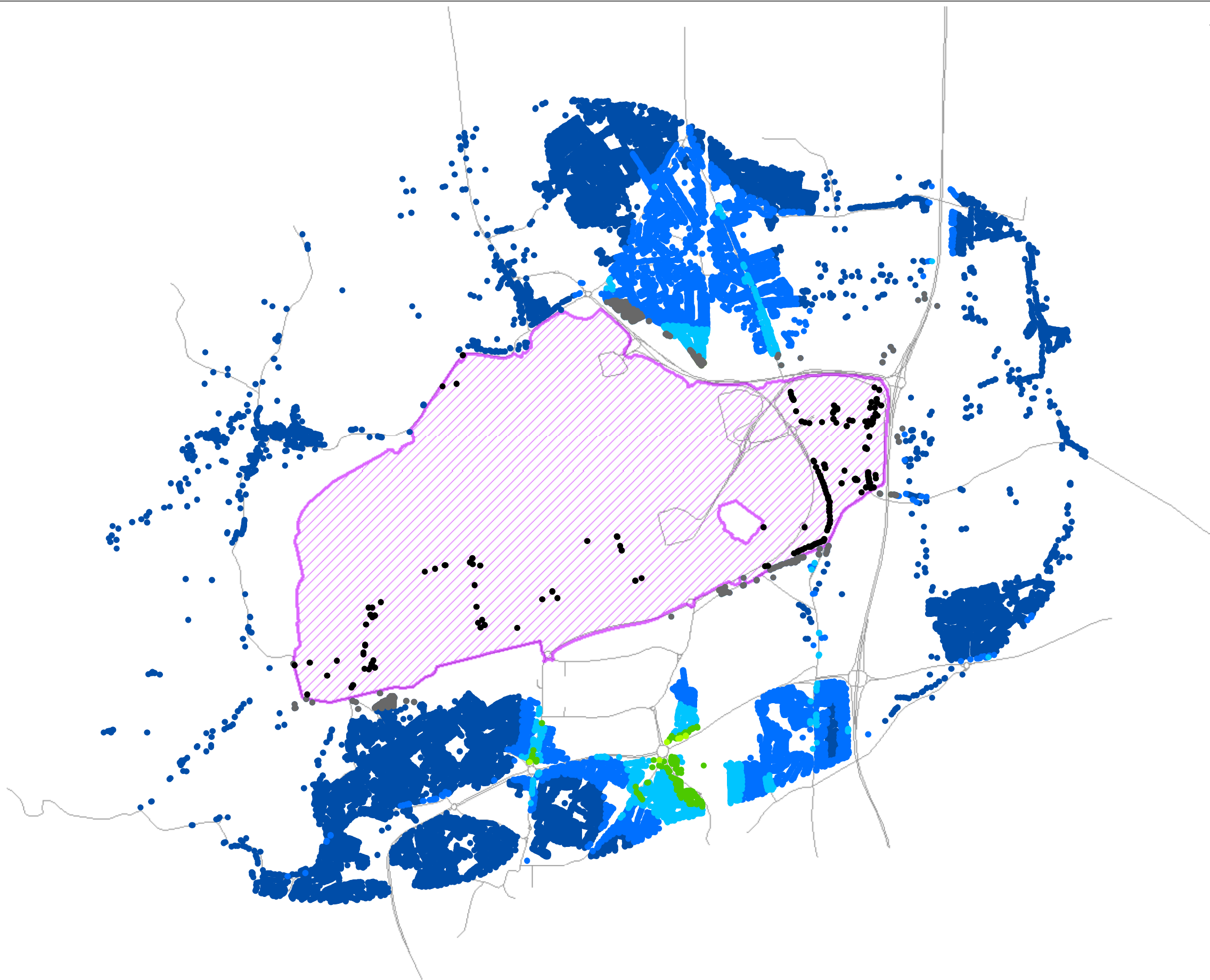



FIGURE 4.7

- Legend
- Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030**
- < 20
 - 20 - 25
 - 25 - 30
 - 30 - 35
 - 35 - 40
 - 40 - 45
 - 45 - 50
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- Gatwick 2R Scheme Boundary



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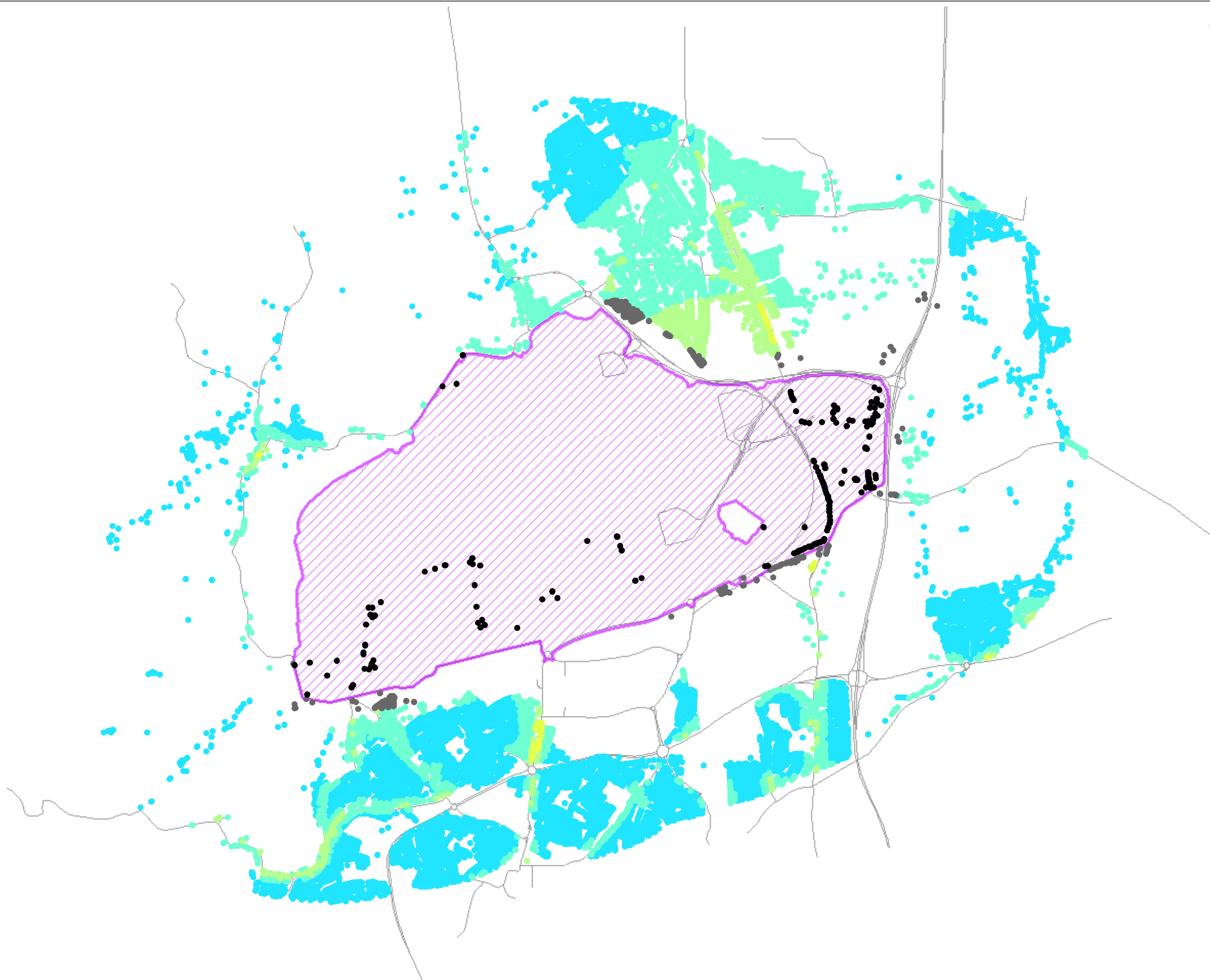


FIGURE 4.8

- Legend
- Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) - 2030**
- 6 - -4
 - 4 - -2
 - 2 - 0
 - 0 - 2
 - 2 - 4
 - 4 - 6
 - 6 - 8
 - 8 - 10
 - 10 - 12
 - 12 - 14
 - 14 - 16
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- ▨ Gatwick 2R Scheme Boundary



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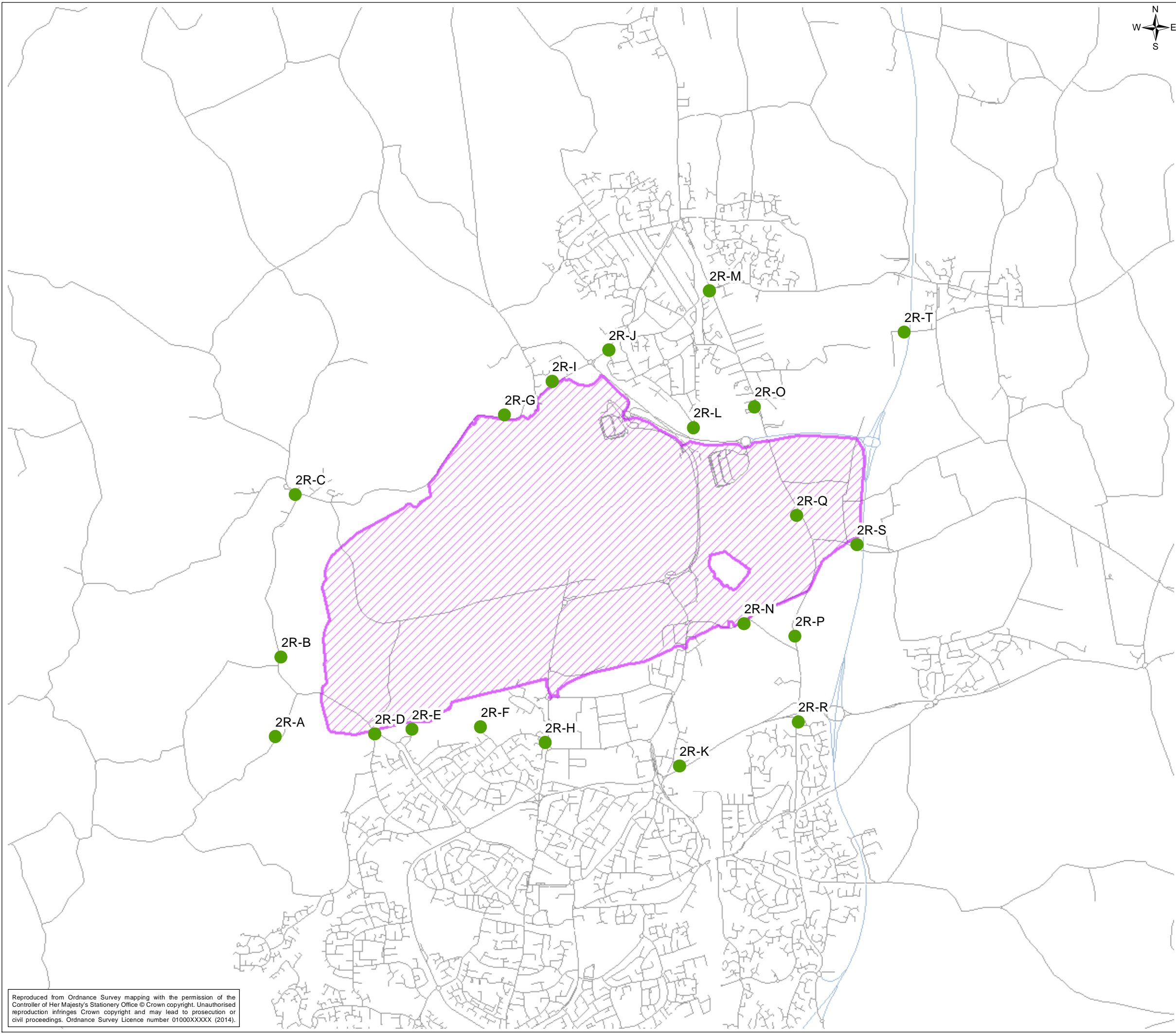



FIGURE 4.9

- Legend
- Source Apportionment Receptors
 - ▨ Gatwick 2R Scheme Boundary



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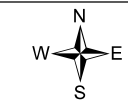
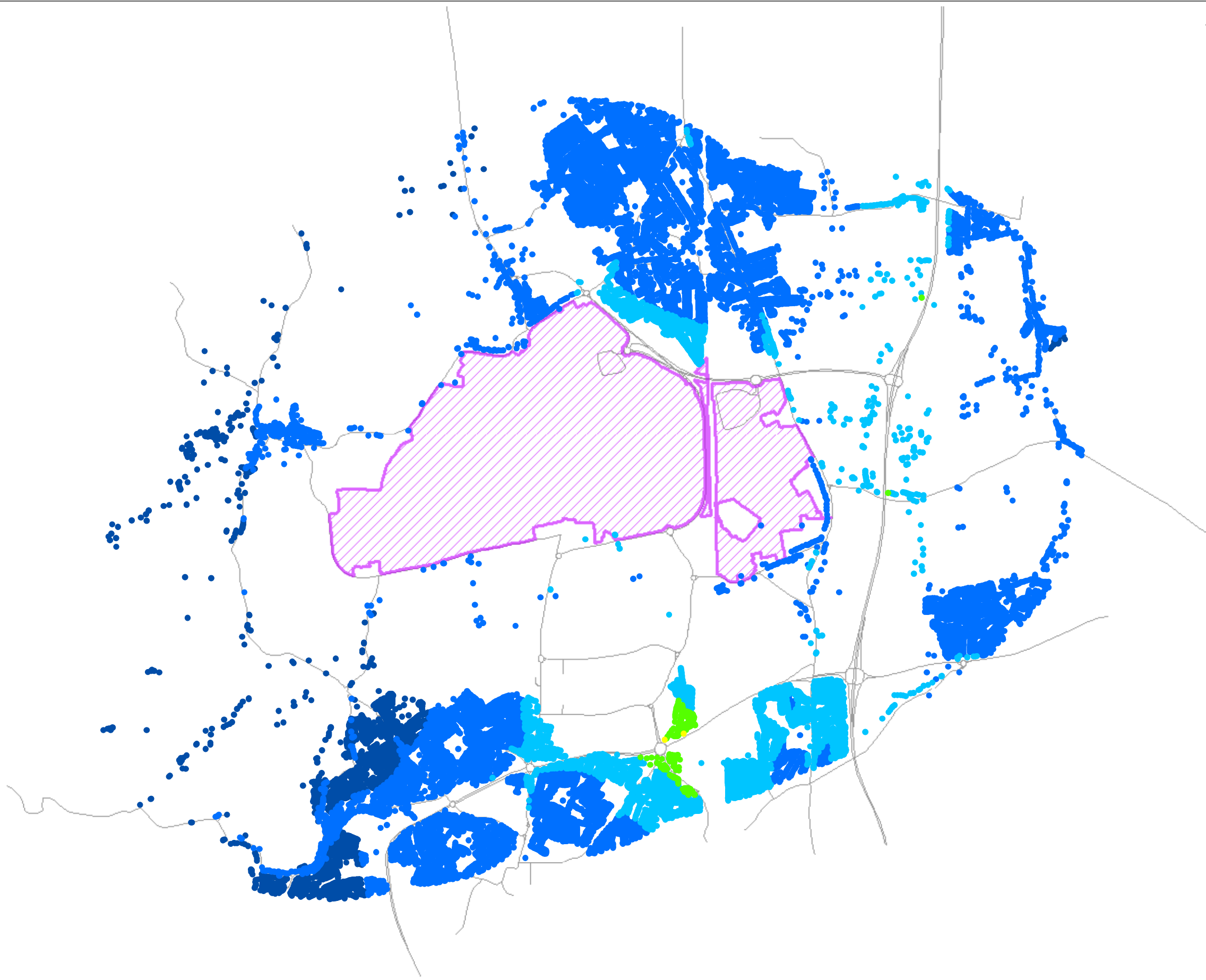



FIGURE 4.10



Legend

Predicted Annual Mean PM₁₀ Concentrations (µg/m³) - 2030

- < 16
- 16 - 18
- 18 - 20
- 20 - 22
- 22 - 24
- 24 - 26

 Gatwick Existing Boundary



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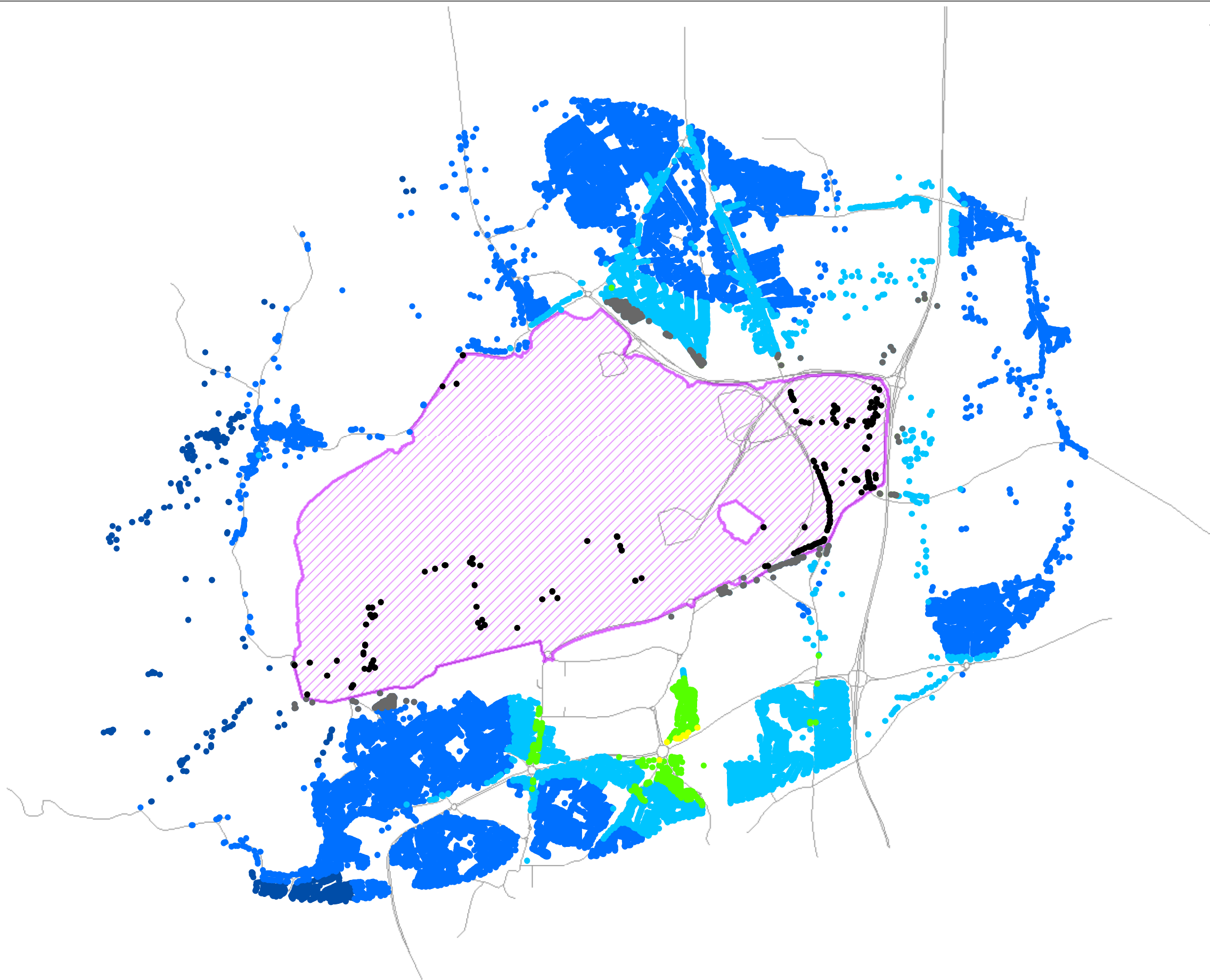



FIGURE 4.11

- Legend
- Predicted Annual Mean PM₁₀ Concentrations (µg/m³) - 2030**
- < 16
 - 16 - 18
 - 18 - 20
 - 20 - 22
 - 22 - 24
 - 24 - 26
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- Gatwick 2R Scheme Boundary



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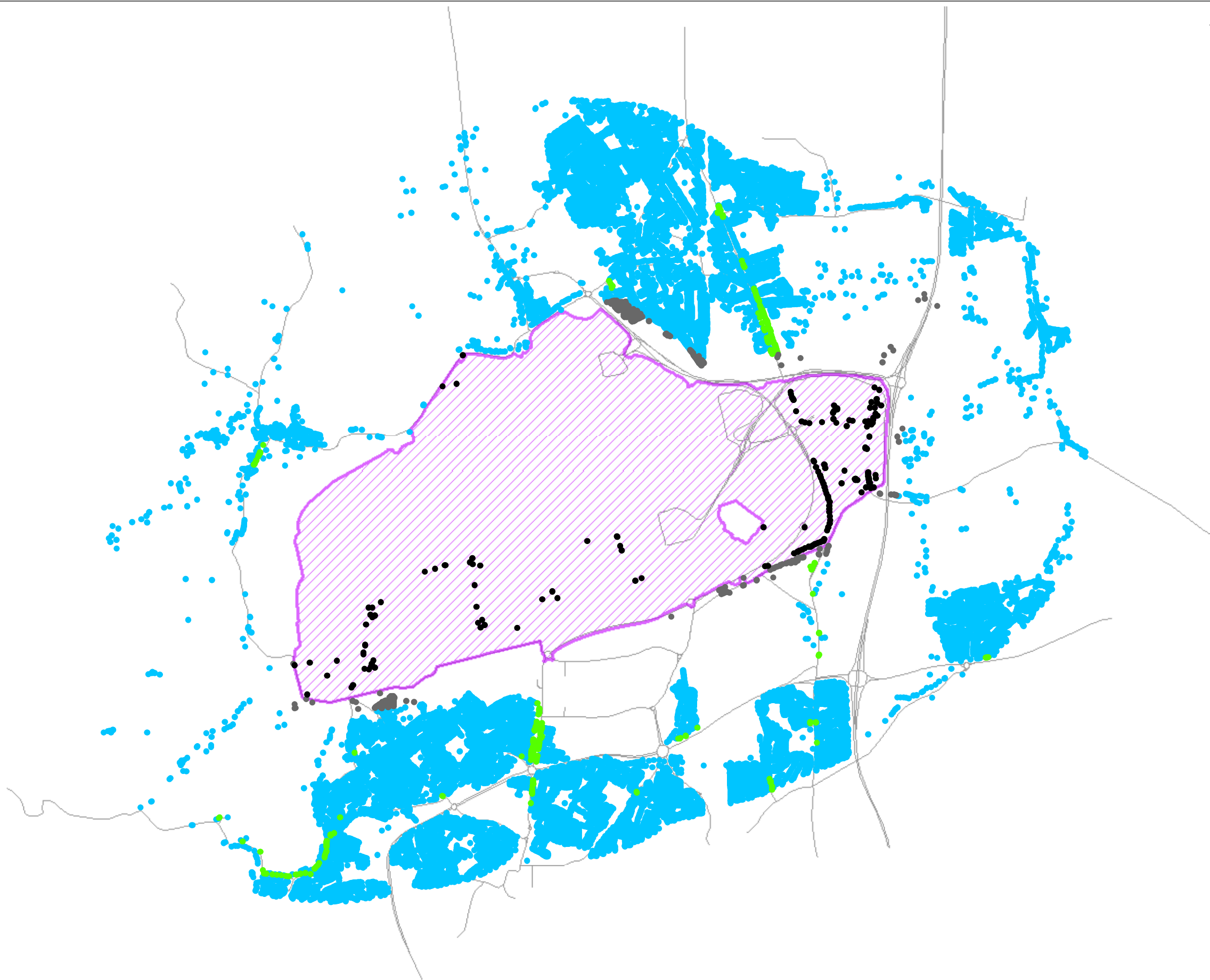


FIGURE 4.12

- Legend
- Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) - 2030**
- 1 - 0
 - 0 - 1
 - 1 - 2
 - 2 - 3
 - 3 - 4
 - 4 - 5
 - Receptors within 200m of modelled indicative new road alignment
 - Receptors Directly Impacted by Scheme
 - Gatwick 2R Scheme Boundary



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Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) - 2030

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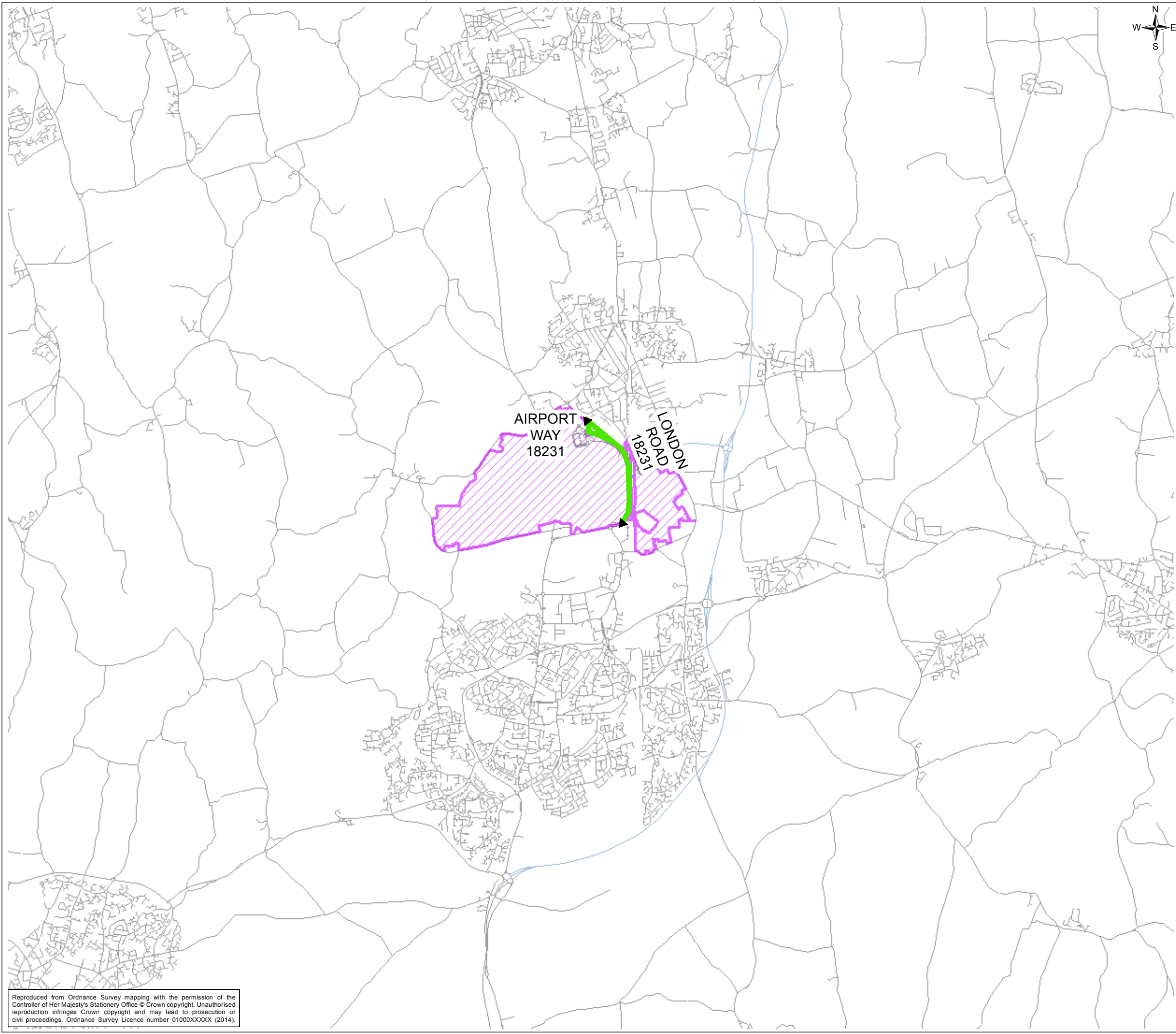


FIGURE 4.13


Legend

Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2030

- 32 - 40 At Risk of Exceeding the Limit Value
- >40 Exceeding the Limit Value
- Gatwick Existing Boundary

The numbers displayed are the Census Area Identification Numbers.



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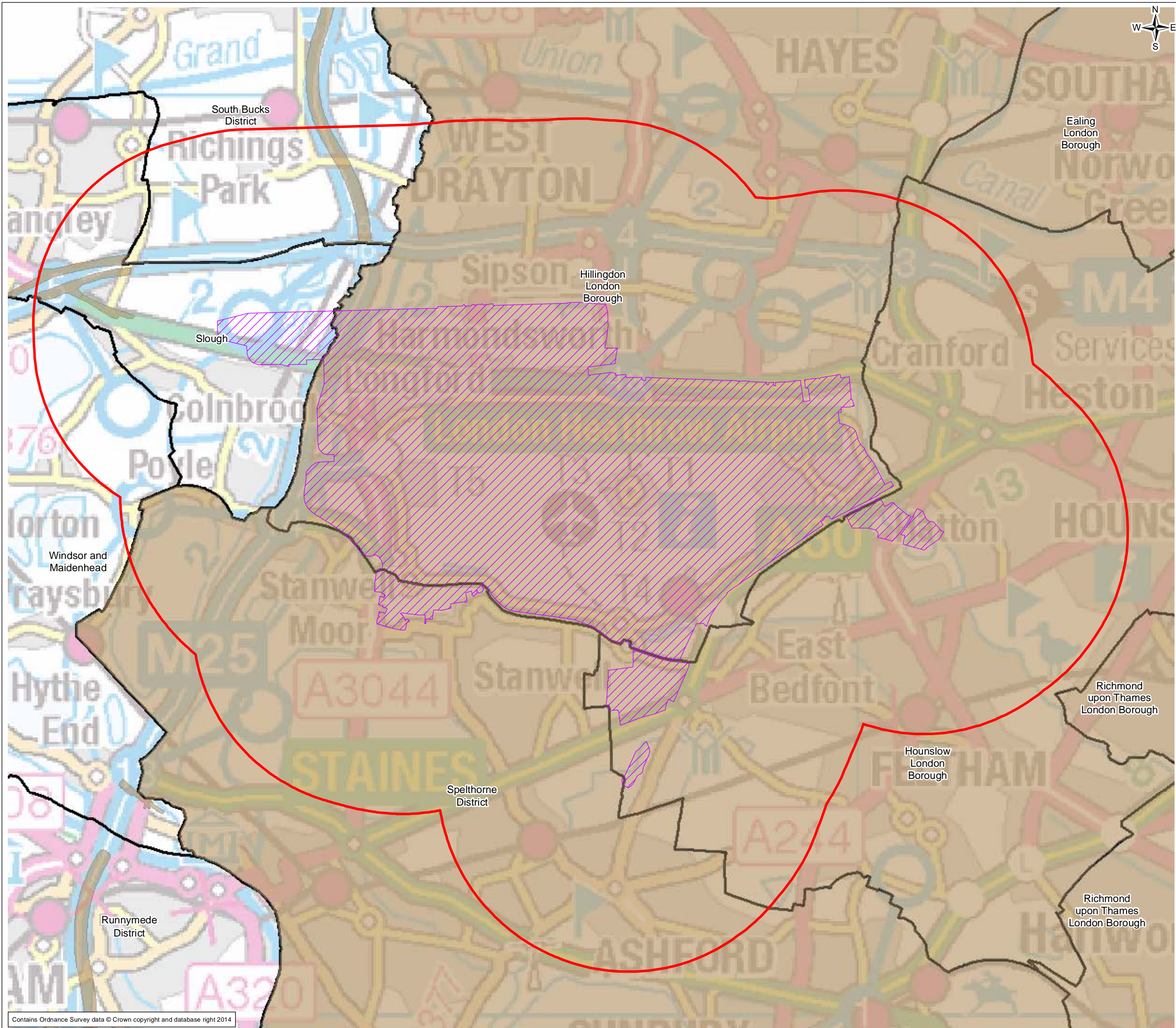



FIGURE 5.1

- Legend
- Heathrow NWR boundary
 - Principal study area
 - Administrative boundaries
 - Air Quality Management Areas

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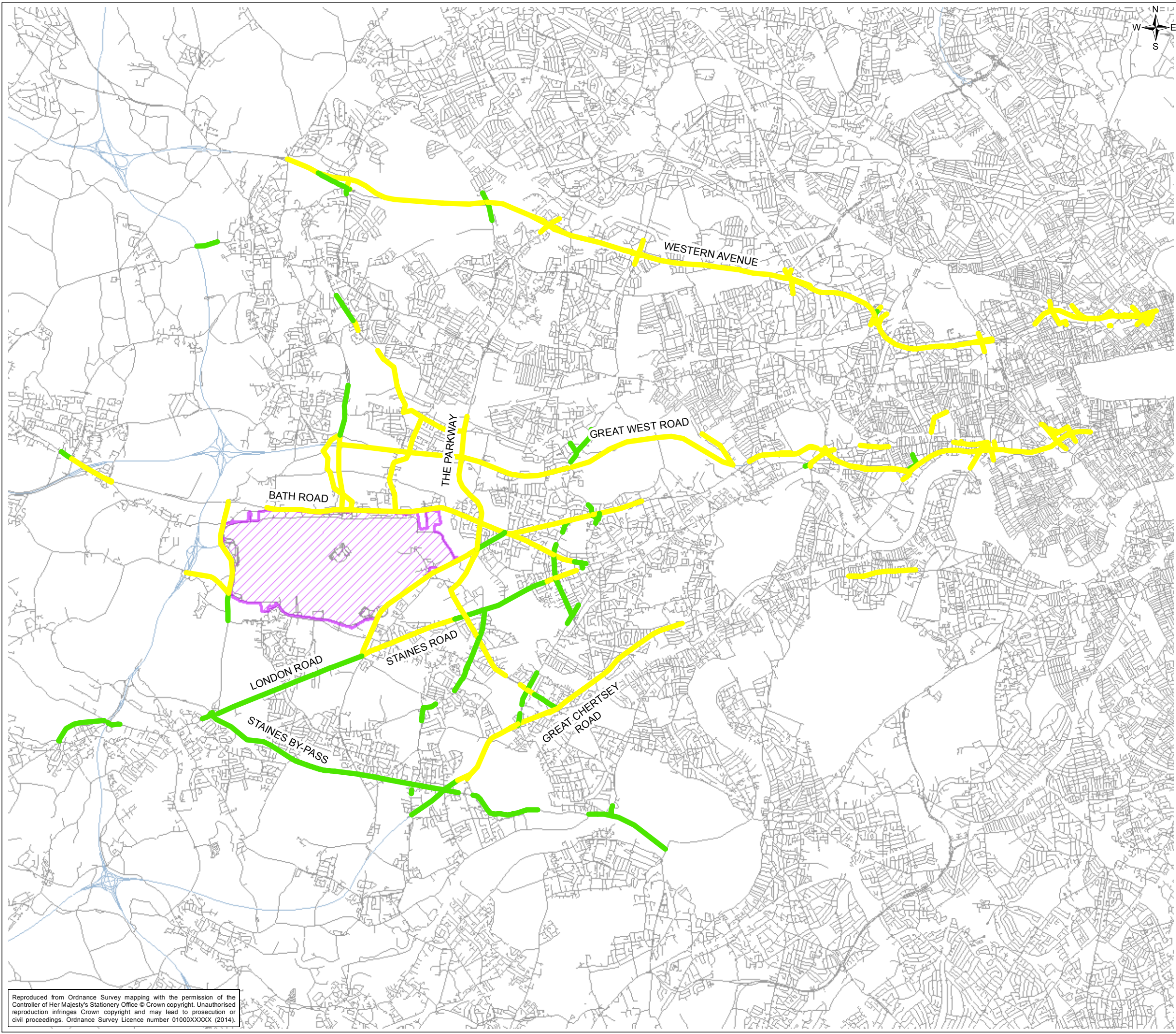




FIGURE 5.4

Legend

Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2009

- 32 - 40 At Risk of Exceeding the Limit Value
- >40 Exceeding the Limit Value
- Heathrow Existing Boundary



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FIGURE 5.6

Legend
Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030

- < 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50

Heathrow Existing Boundary



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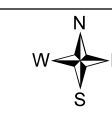
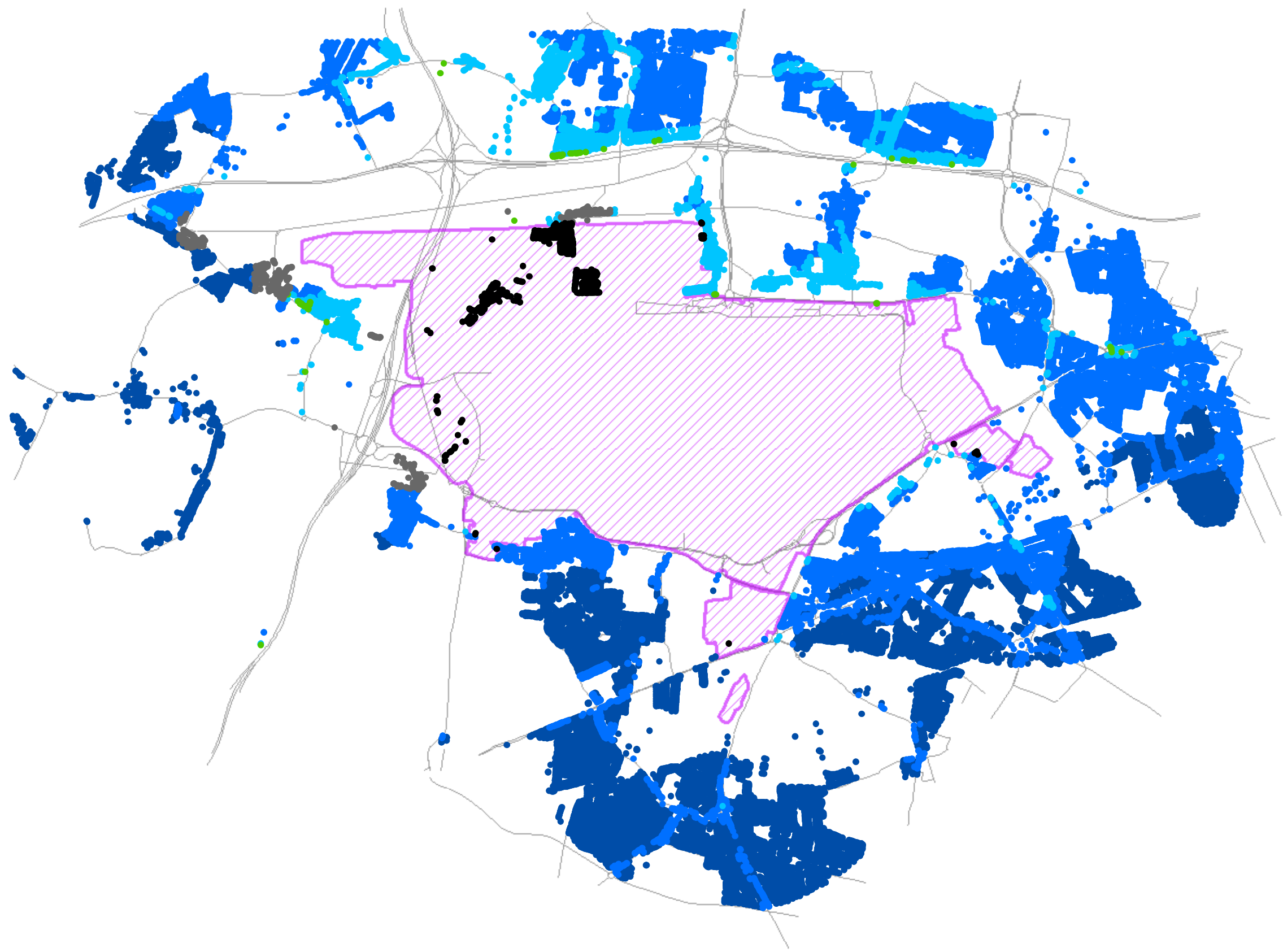


FIGURE 5.7

- Legend
- Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030**
- < 20
 - 20 - 25
 - 25 - 30
 - 30 - 35
 - 35 - 40
 - 40 - 45
 - 45 - 50
 - Receptors within 200m of modelled indicative new road alignment
 - Receptors Directly Impacted by Scheme
 - ▨ Heathrow NWR Scheme Boundary



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<div><div>Project</div><div>B4160007 - DfT Airports Commission Environmental Support</div></div>						
<div><div>Drawing Title</div><div>Heathrow NWR Predicted Annual Mean NO₂ Concentrations - 2030</div></div>						
<div><div>Drawing Status</div><div><div>Scale @ A3</div><div>1:45,000</div><div>DO NOT SCALE</div></div><div><div>Jacobs No.</div><div>B4160007</div></div><div><div>Client No.</div><div></div></div><div><div>Drawing No.</div><div>FIGURE 5.7</div></div></div>						
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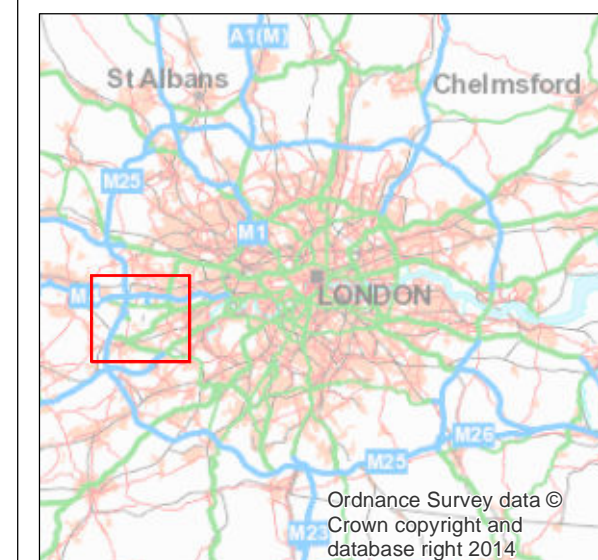


FIGURE 5.8

Legend

Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) - 2030

- 6 - -4
- 4 - -2
- 2 - 0
- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- Heathrow NWR Scheme Boundary



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Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) - 2030

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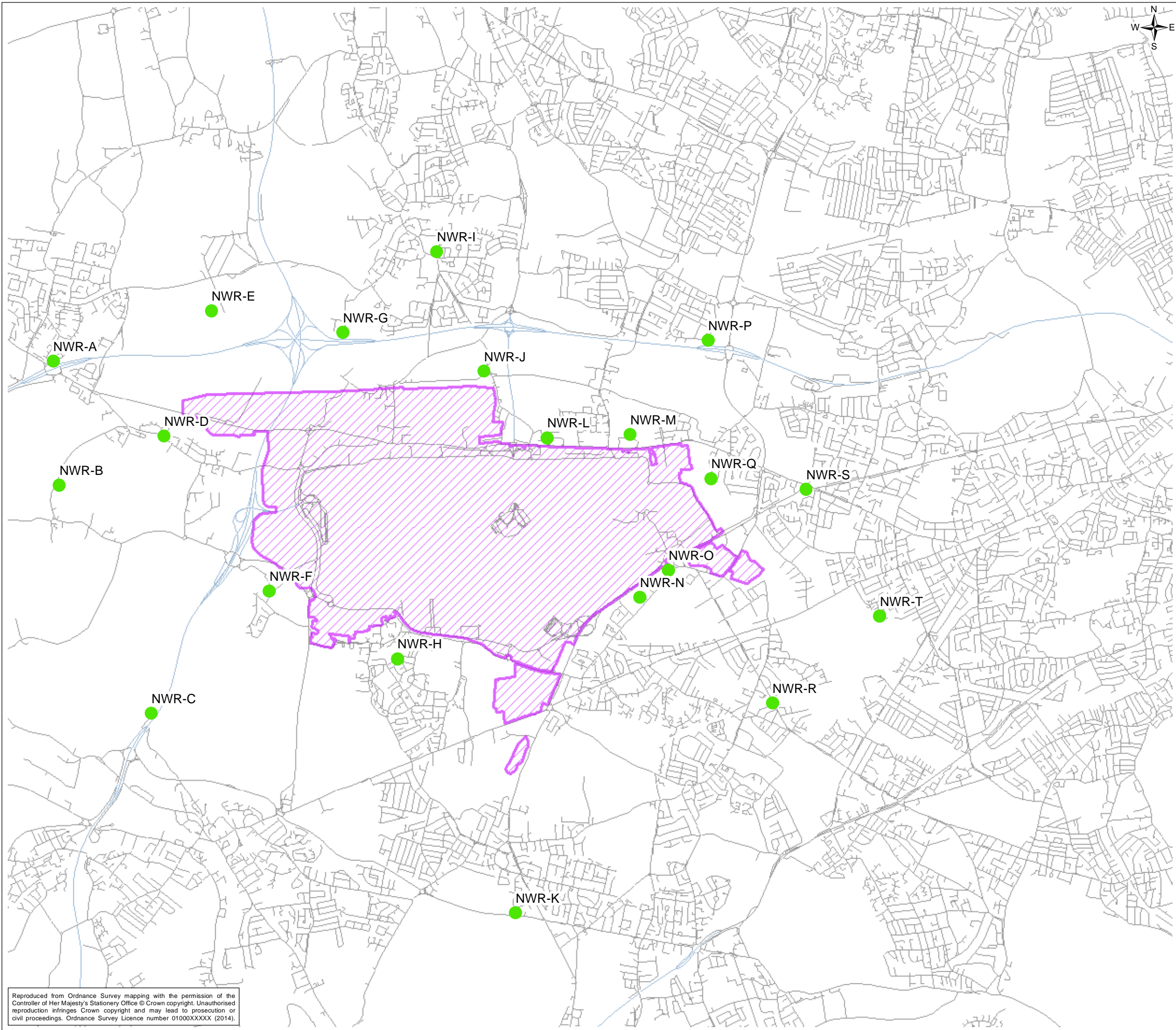


Figure 5.9

- Legend
- Source Apportionment Receptors
 - Heathrow NWR Scheme Boundary



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<div>Drawing Title<div>Source Apportionment Receptors Heathrow NWR</div></div>						
<div>Drawing Status<div>Scale @ A31:50,000DO NOT SCALE</div></div>						
<div>Jacobs No.B4160007</div>						
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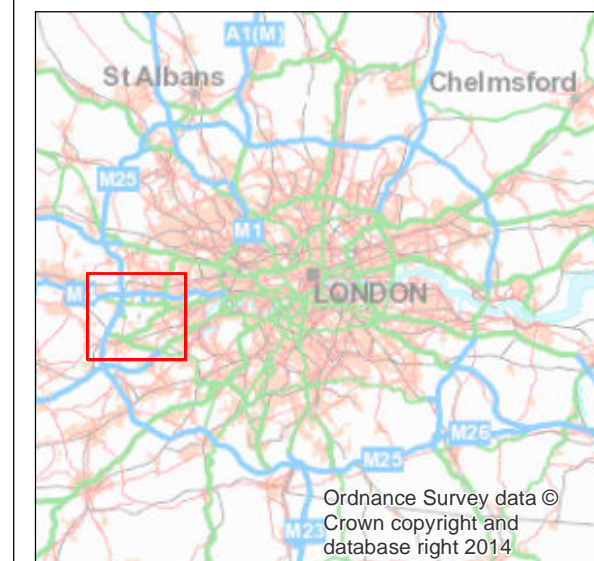
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FIGURE 5.10

Legend
**Predicted Annual Mean PM₁₀
Concentrations (µg/m³) - 2030**

- < 16
- 16 - 18
- 18 - 20
- 20 - 22
- 22 - 24
- 24 - 26
- ▨ Heathrow Existing Boundary



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**Do-Minimum Predicted Annual Mean
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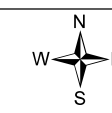
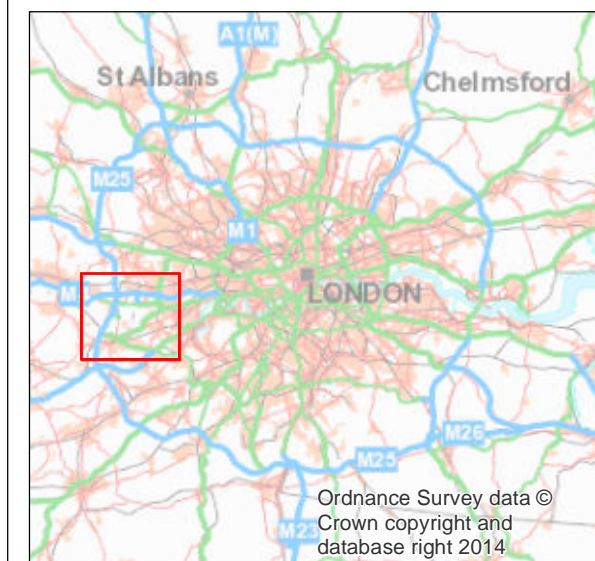


FIGURE 5.11

- Legend
- Predicted Annual Mean PM₁₀ Concentrations (µg/m³) - 2030**
- < 16
 - 16 - 18
 - 18 - 20
 - 20 - 22
 - 22 - 24
 - 24 - 26
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- ▨ Heathrow NWR Scheme Boundary



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Heathrow NWR Predicted Annual Mean
PM₁₀ Concentrations (µg/m³) - 2030

Drawing Status		
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FIGURE 5.11

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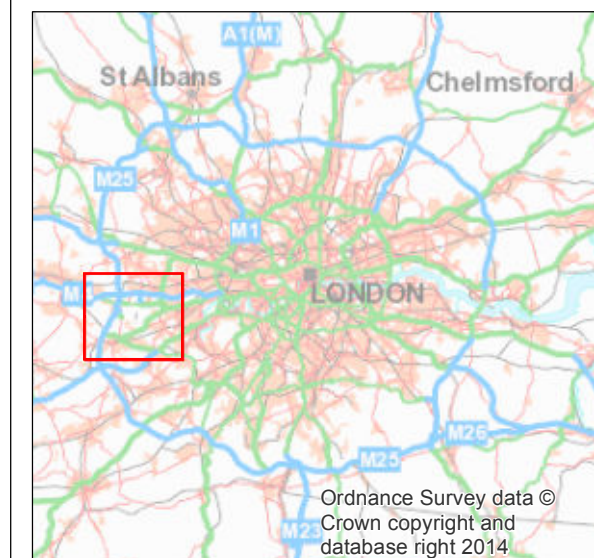


FIGURE 5.12

Legend

Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

- -1 - 0
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- ▨ Heathrow NWR Scheme Boundary



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Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) – 2030

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Client No.	
Drawing No.	FIGURE 5.12

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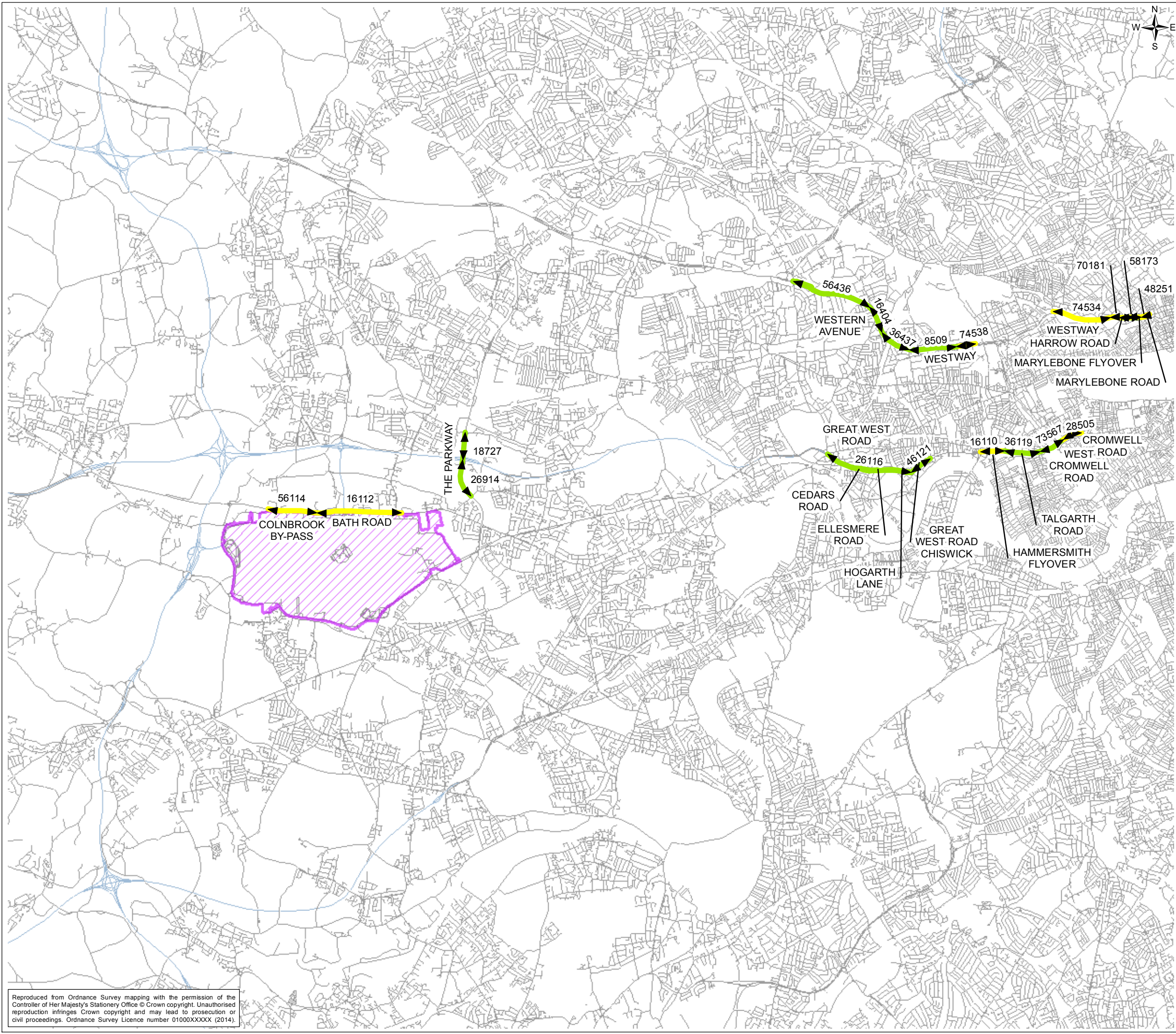
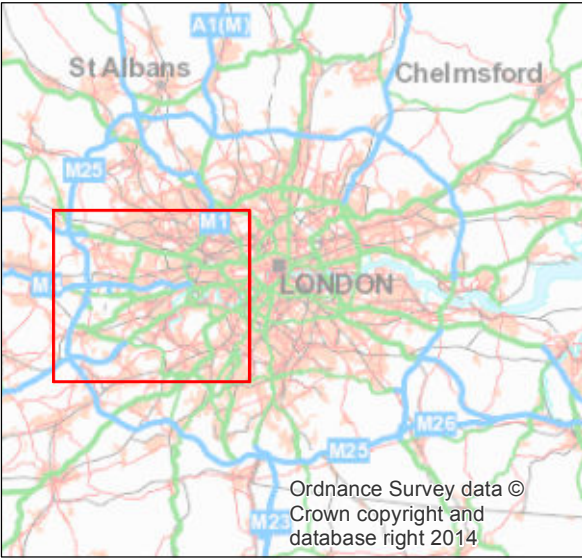


FIGURE 5.13

- Legend
- Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2030**
- 32 - 40 At Risk of Exceeding the Limit Value
 - >40 Exceeding the Limit Value
 - Heathrow Existing Boundary

The numbers displayed are the Census Area Identification Numbers.



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Drawing Status						
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Drawing No.						
FIGURE 5.13						
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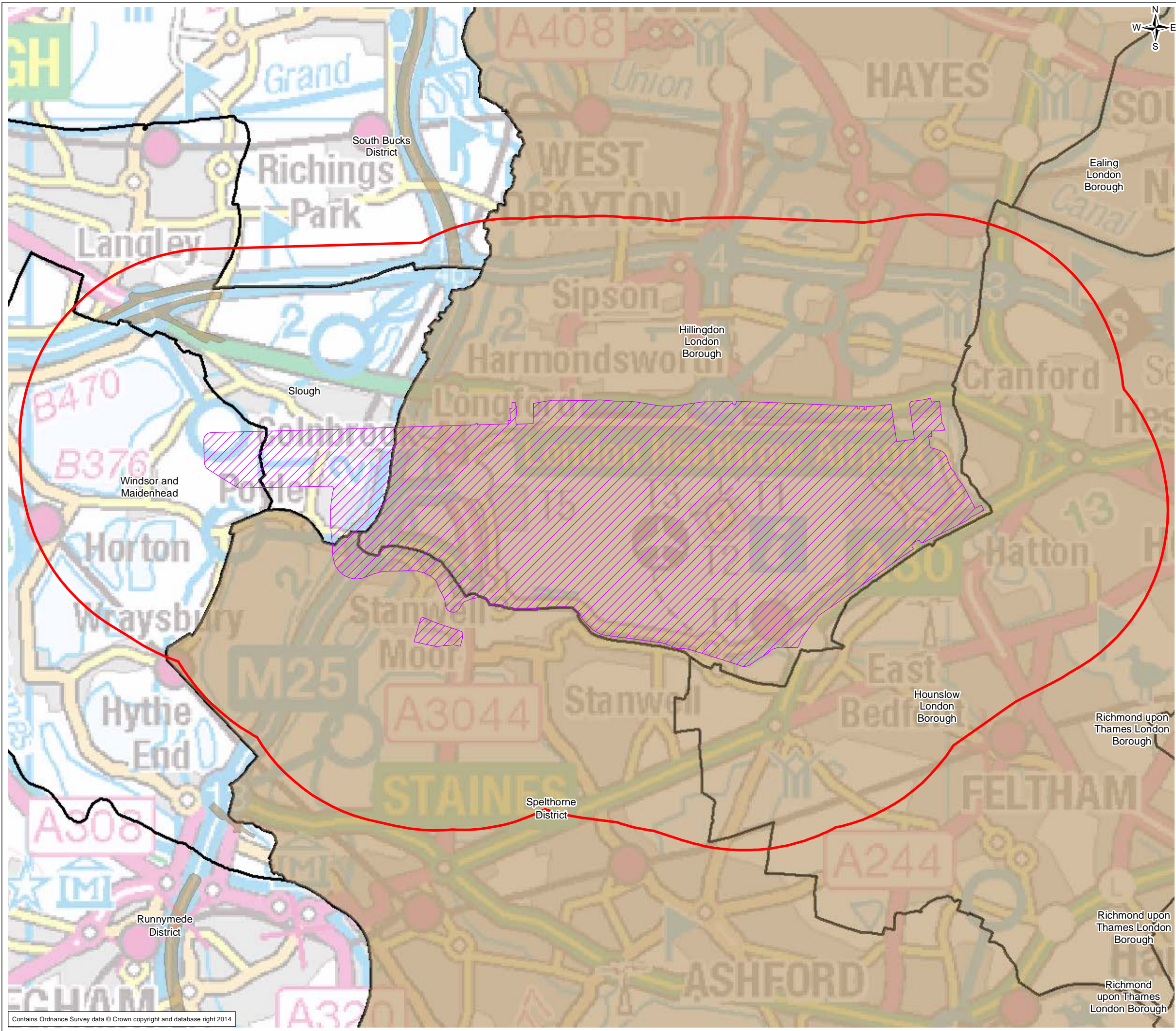



FIGURE 6.1

- Legend
- Heathrow ENR boundary
 - Principal study area
 - Administrative boundaries
 - Air Quality Management Areas

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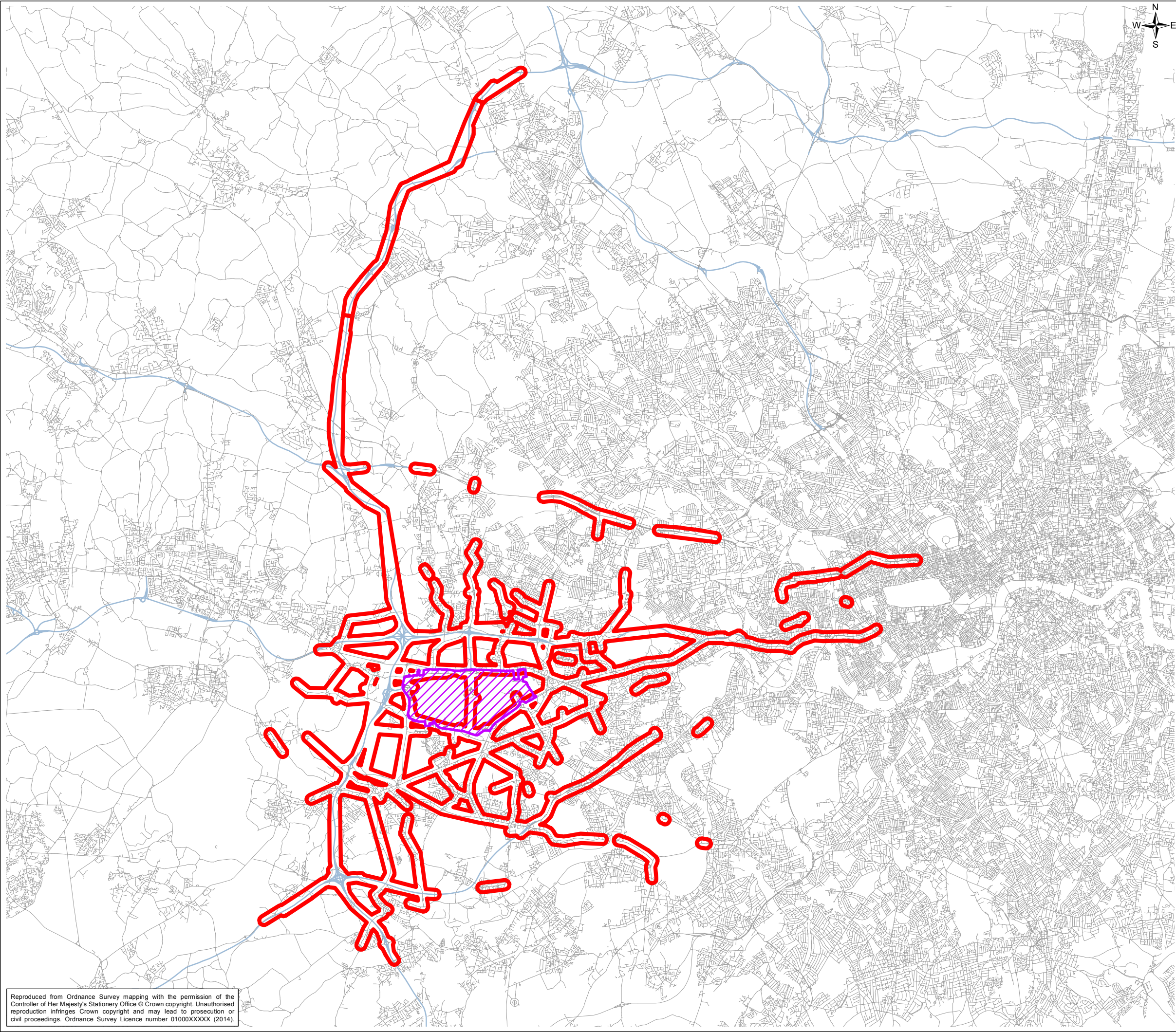
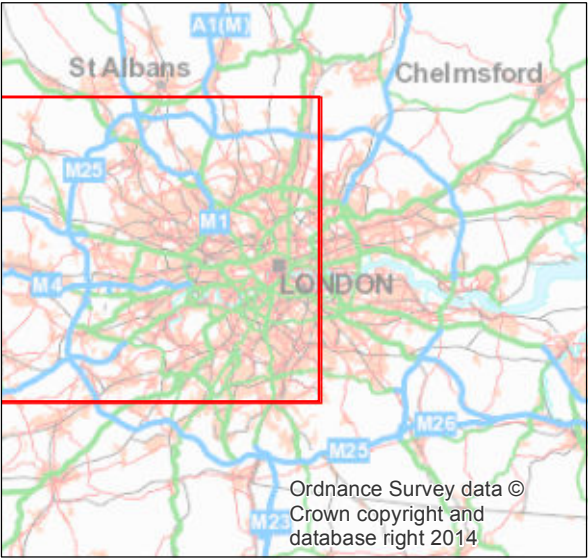



FIGURE 6.2

- Legend
- ENR Wider Study Area (Road Links Affected by Scheme)
 - Heathrow Existing Boundary



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Wider Study Area – Heathrow ENR							
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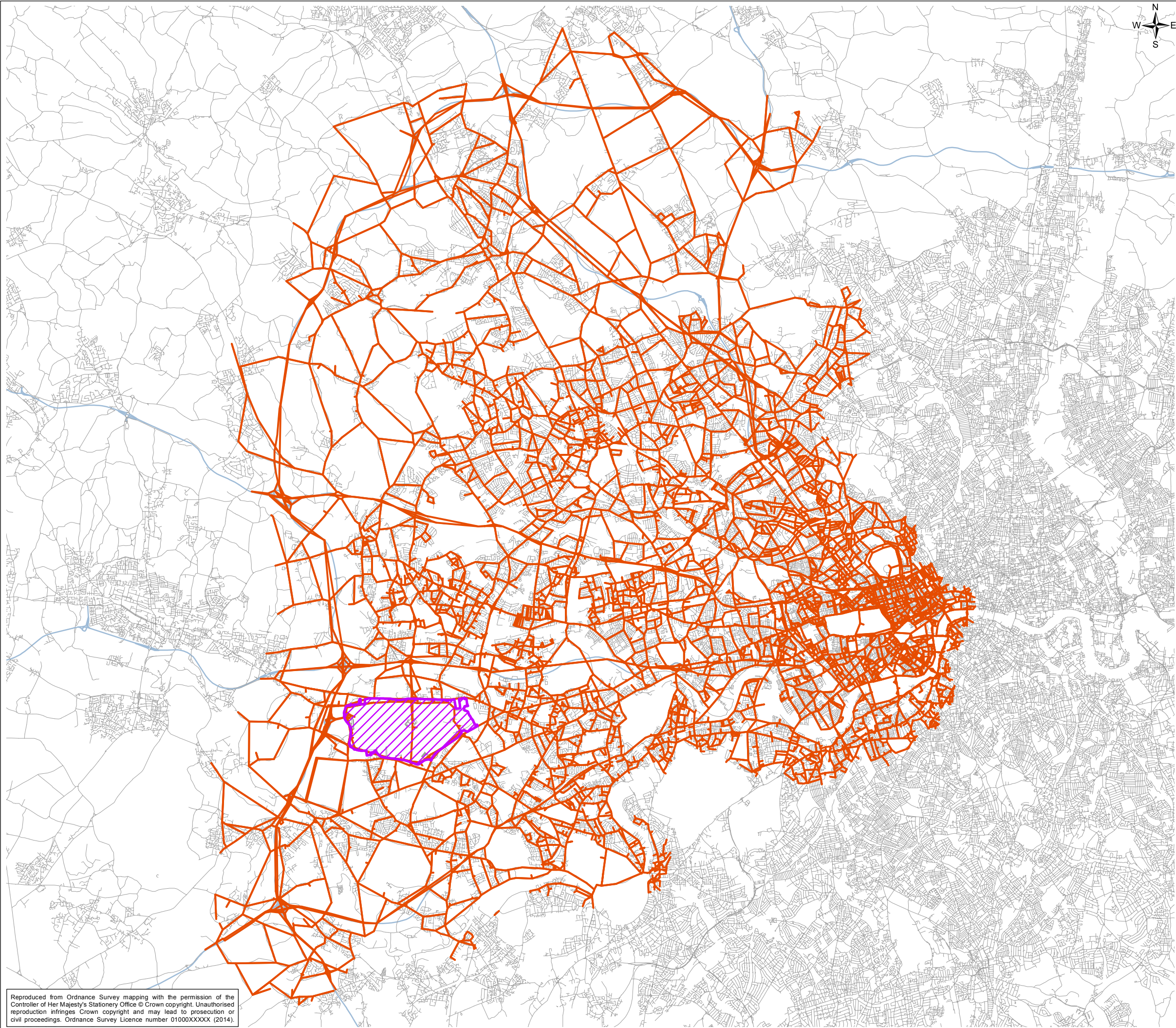
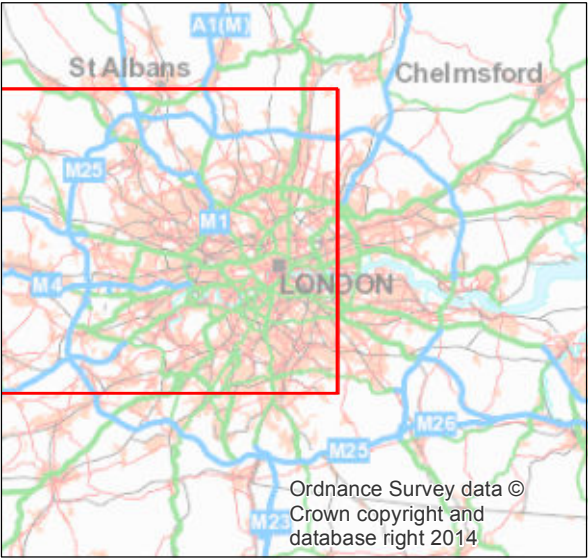



FIGURE 6.3

- Legend
- ENR Traffic Simulation Area
 - Heathrow Existing Boundary



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Drawing Title						
Traffic Simulation Area – Heathrow ENR						
Drawing Status						
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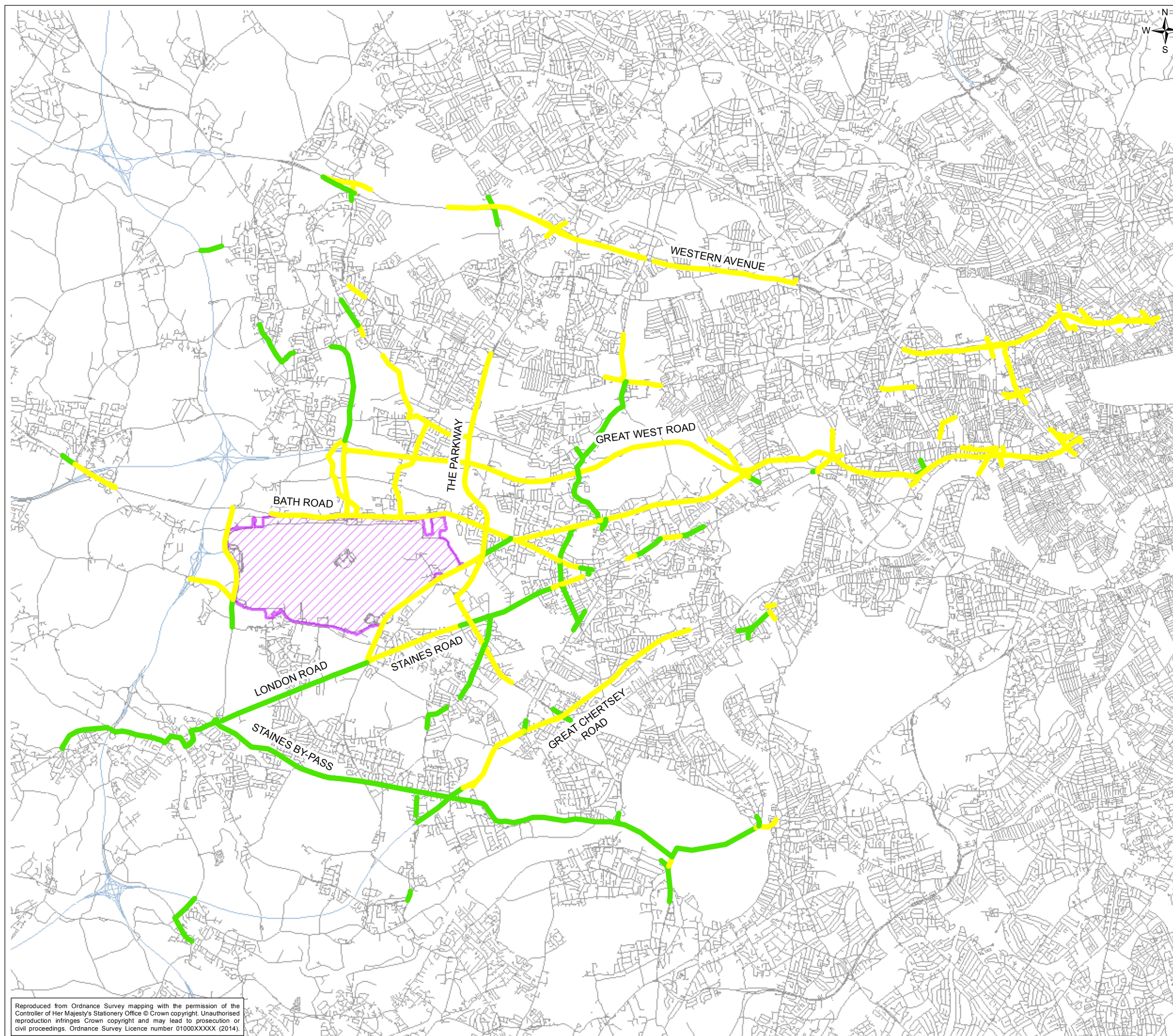


FIGURE 6.4

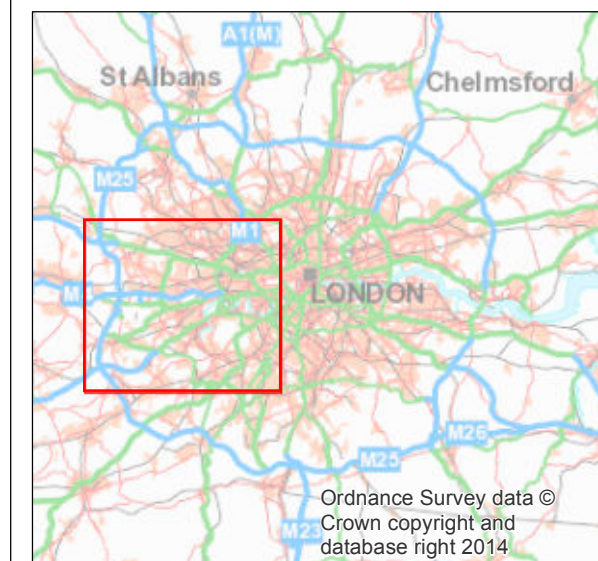
Legend

Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2009

32 - 40 At Risk of Exceeding the Limit Value

— >40 Exceeding the Limit Value

 Heathrow Existing Boundary



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Concentrations (µg/m³) – 2009

Drawing Status	
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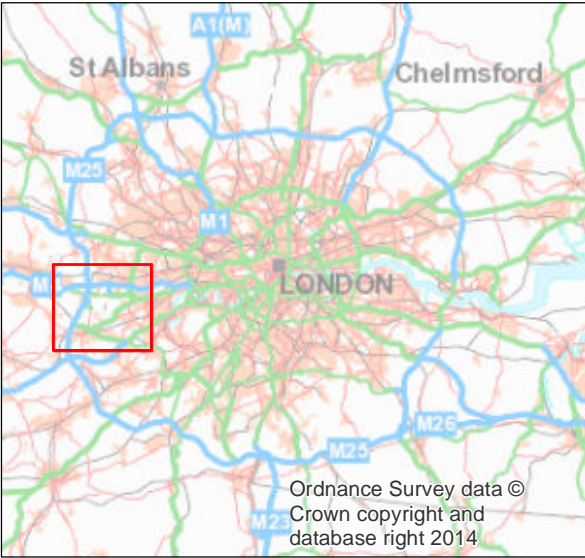
FIGURE 6.6


Legend

Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030

- < 20
- 20 - 25
- 25 - 30
- 30 - 35
- 35 - 40
- 40 - 45
- 45 - 50

Heathrow Existing Boundary



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FIGURE 6.7

- Legend
- Predicted Annual Mean NO₂ Concentrations (µg/m³) - 2030**
- < 20
 - 20 - 25
 - 25 - 30
 - 30 - 35
 - 35 - 40
 - 40 - 45
 - 45 - 50
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- Heathrow ENR Scheme Boundary



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<div>Drawing Status</div> <div>Scale @ A31:45,000DO NOT SCALE</div>						
<div>Jacobs No.B4160007</div>						
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<div>Drawing No.</div> <div>FIGURE 6.7</div>						
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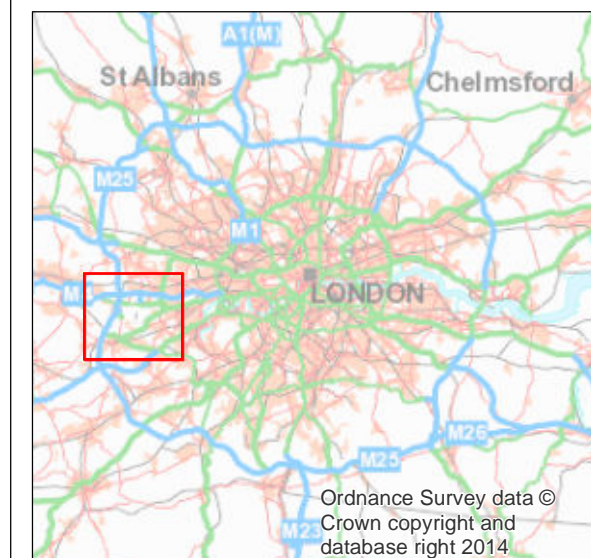


FIGURE 6.8

Legend

Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) - 2030

- -6 - -4
- -4 - -2
- -2 - 0
- 0 - 2
- 2 - 4
- 4 - 6
- 6 - 8
- 8 - 10
- 10 - 12
- 12 - 14
- 14 - 16
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- ▨ Heathrow ENR Scheme Boundary



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Incremental Change to Annual Mean NO₂ Concentrations (ug/m³) - 2030

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Client No.		
Drawing No.	FIGURE 6.8	

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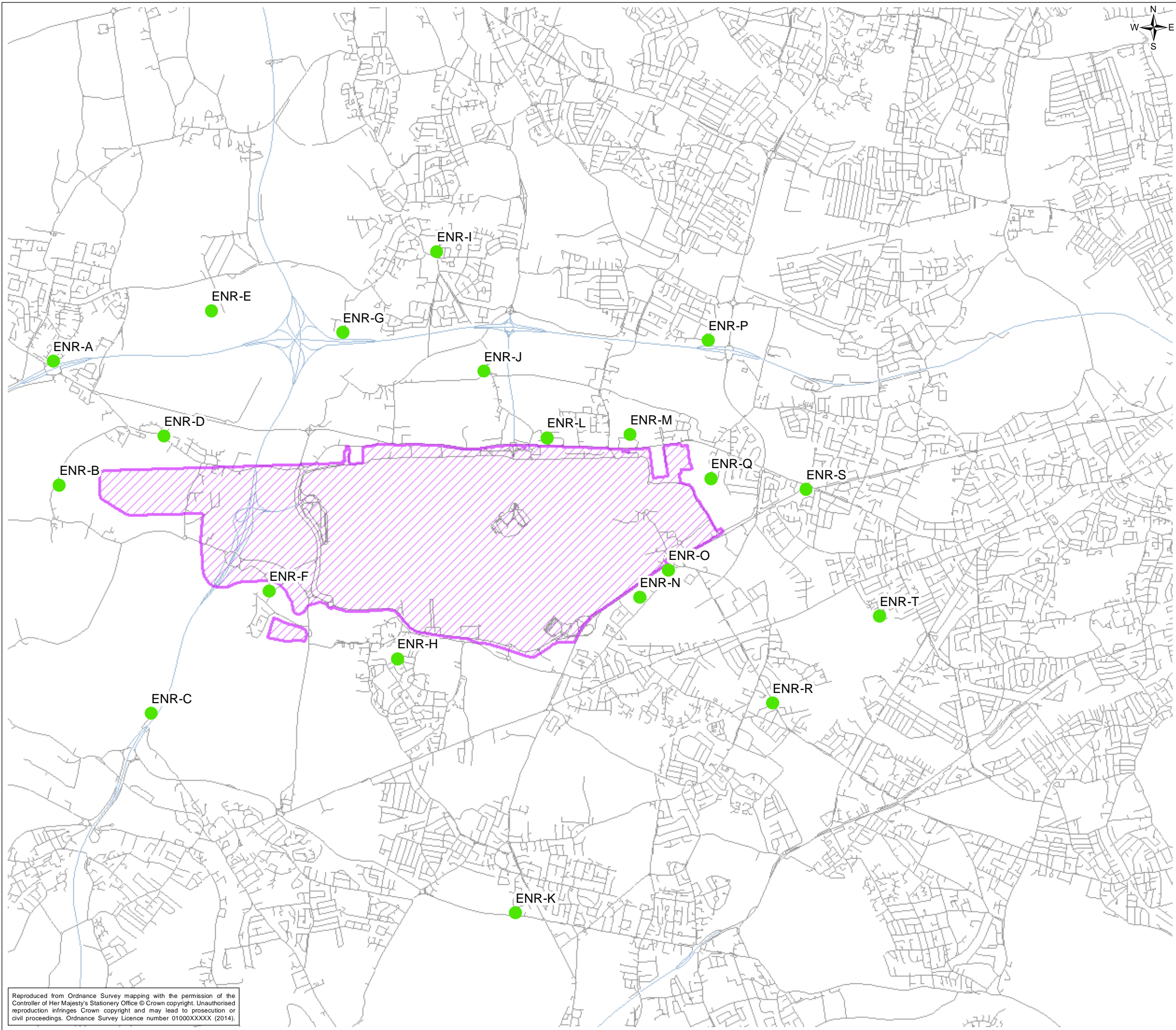



FIGURE 6.9

- Legend
- Source Apportionment Receptors
 - Heathrow ENR Scheme Boundary



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Project						
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Drawing Title						
Source Apportionment Receptors Heathrow ENR						
Drawing Status						
Scale @ A3	1:50,000				DO NOT SCALE	
Jacobs No.	B4160007					
Client No.						
Drawing No.						
FIGURE 6.9						
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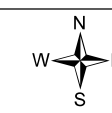


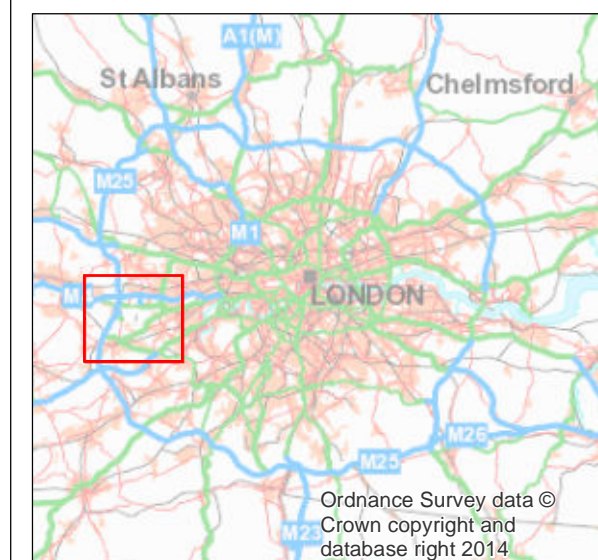
FIGURE 6.10

Legend

Predicted Annual Mean PM₁₀
Concentrations (µg/m³) - 2030

- < 16
- 16 - 18
- 18 - 20
- 20 - 22
- 22 - 24
- 24 - 26

 Heathrow Existing Boundary



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Project

B4160007 - DfT Airports Commission Environmental Support

Drawing Title

Do-Minimum Predicted Annual Mean
PM₁₀ Concentrations (µg/m³) - 2030

Drawing Status		
Scale @ A3	1:45,000	DO NOT SCALE
Jacobs No.	B4160007	
Client No.		
Drawing No.	FIGURE 6.10	

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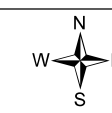
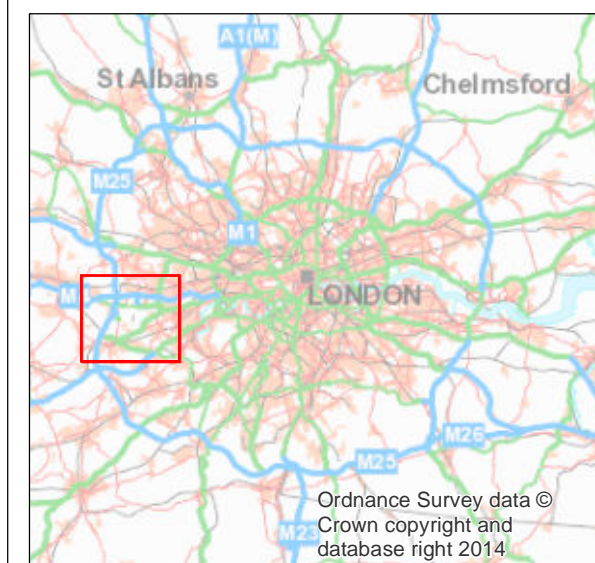


FIGURE 6.11

- Legend
- Predicted Annual Mean PM₁₀ Concentrations (µg/m³) - 2030**
- < 16
 - 16 - 18
 - 18 - 20
 - 20 - 22
 - 22 - 24
 - 24 - 26
 - Receptors within 200m of modelled indicative new road alignment
 - Receptors Directly Impacted by Scheme
 - ▨ Heathrow ENR Scheme Boundary




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Heathrow ENR Predicted Annual Mean PM ₁₀ Concentrations (µg/m ³) - 2030						
Drawing Status						
Scale @ A3	1:45,000				DO NOT SCALE	
Jacobs No.	B4160007					
Client No.						
Drawing No.						
FIGURE 6.11						
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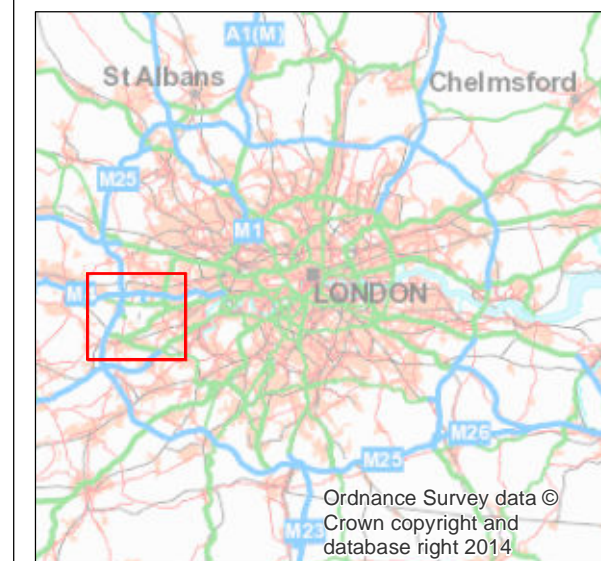


FIGURE 6.12

Legend

Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) - 2030

- -1 - 0
- 0 - 1
- 1 - 2
- 2 - 3
- 3 - 4
- 4 - 5
- Receptors within 200m of modelled indicative new road alignment
- Receptors Directly Impacted by Scheme
- ▨ Heathrow ENR Scheme Boundary



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Drawing Title
Incremental Change to Annual Mean PM₁₀ Concentrations (ug/m³) - 2030

Drawing Status	
Scale @ A3	1:45,000 DO NOT SCALE
Jacobs No.	B4160007
Client No.	
Drawing No.	FIGURE 6.12

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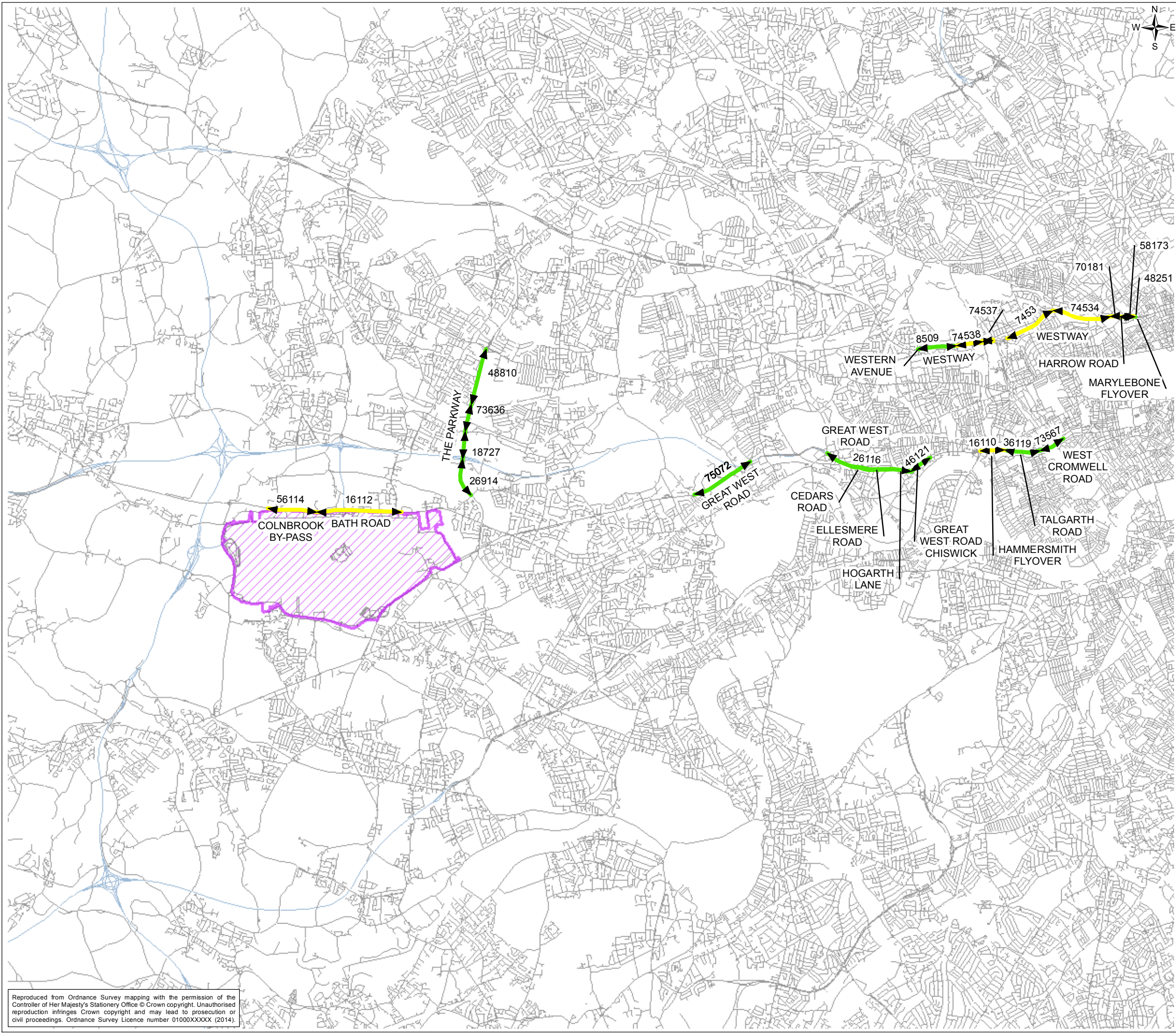
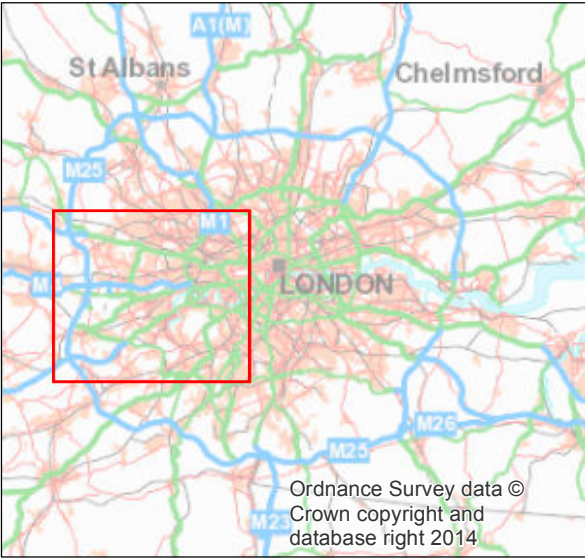


FIGURE 6.13

- Legend
- Annual Mean Roadside NO₂ Concentrations (µg/m³) - 2030**
- 32 - 40 At Risk of Exceeding the Limit Value
 - >40 Exceeding the Limit Value
 - Heathrow Existing Boundary

The numbers displayed are the Census Area Identification Numbers.




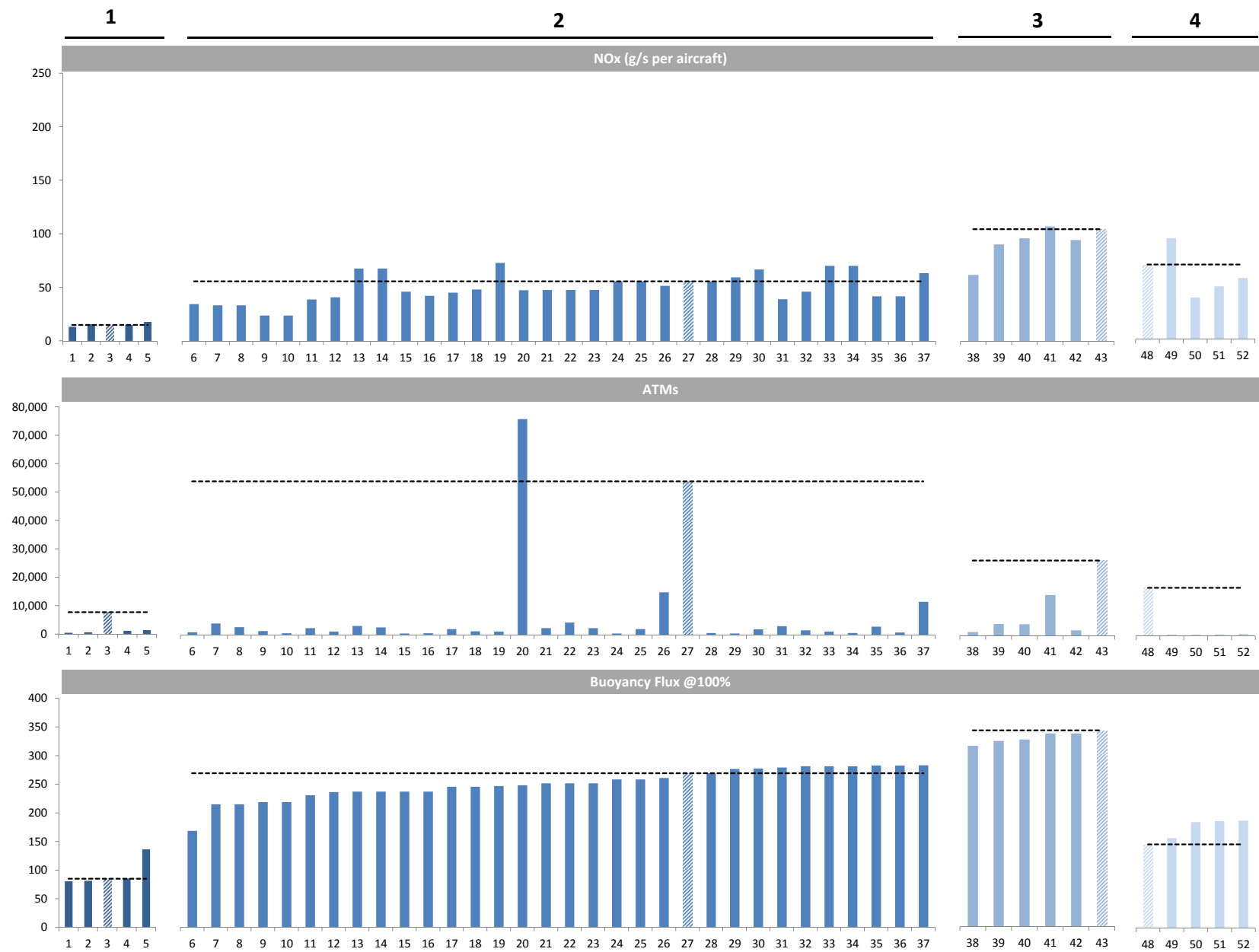
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PCM Annual Mean Roadside NO ₂ Concentrations (µg/m ³) – 2030						
Drawing Status						
Scale @ A3	1:90,000				DO NOT SCALE	
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FIGURE 6.13						
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Figure B1 – MCAT Assignments Heathrow Baseline 2009. MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as bar with hatched shading.



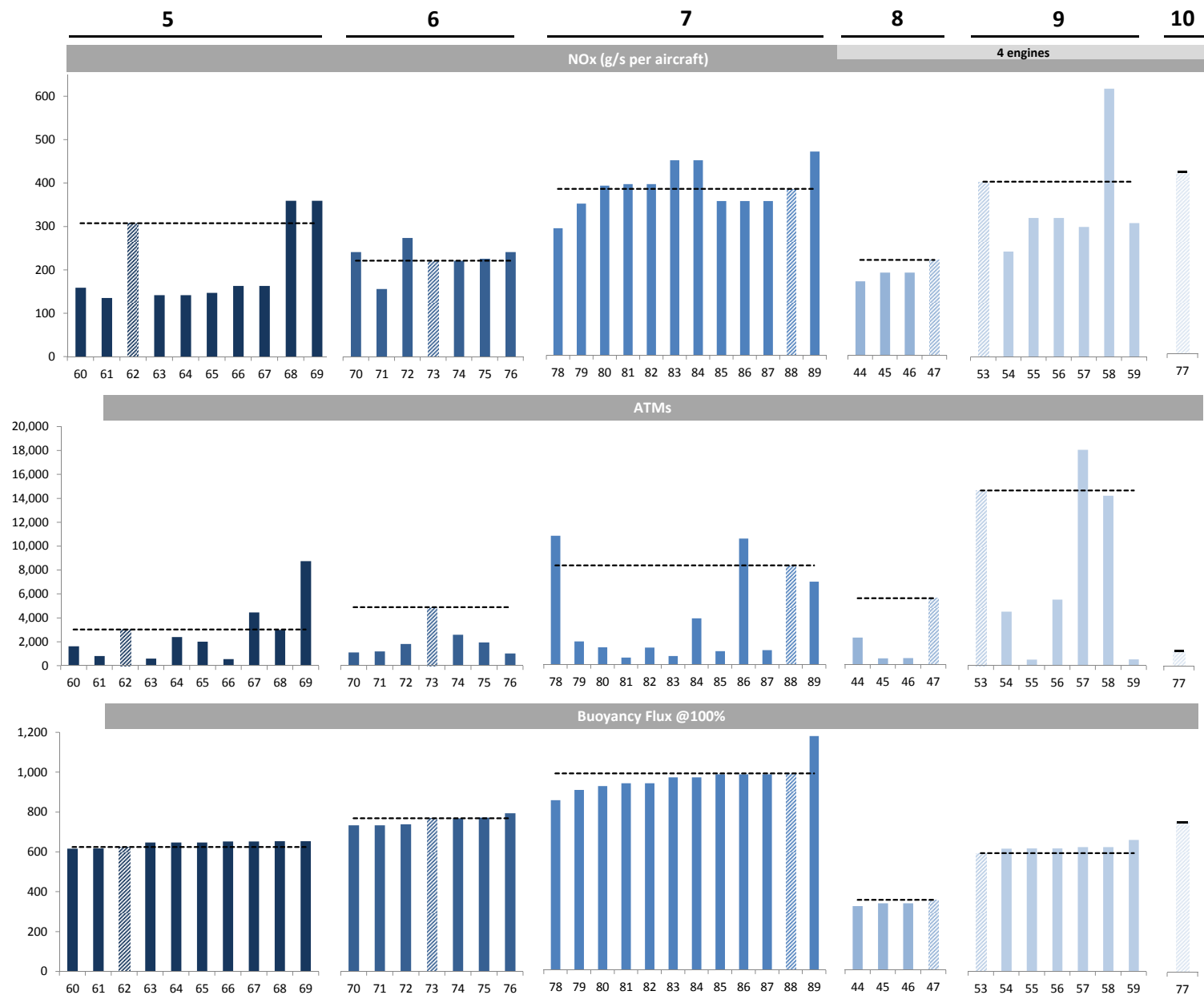


Figure B2 - MCAT Assignments Gatwick Baseline 2009 MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as bar with hatched shading.

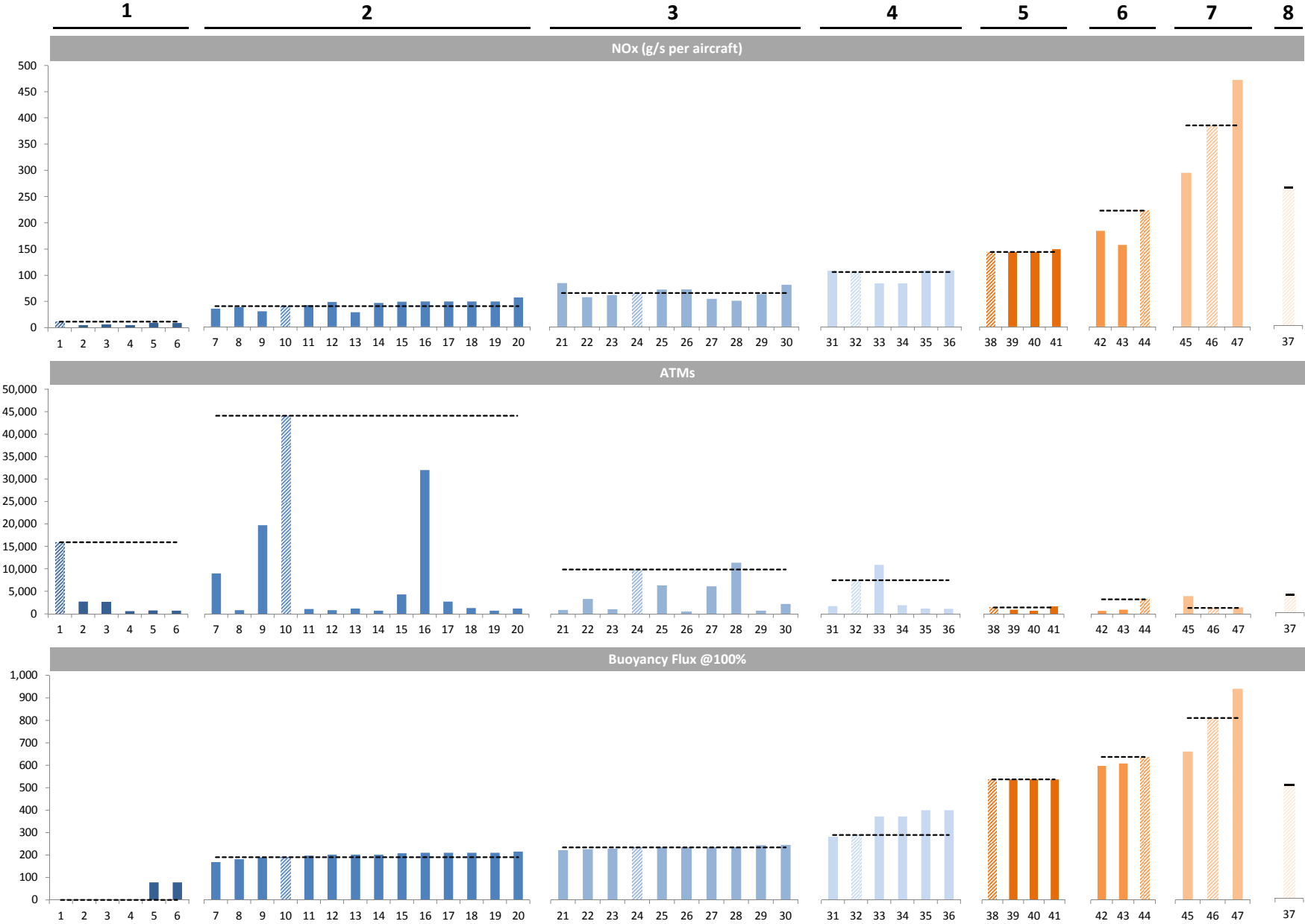


Figure B3 – MCAT Assignments Heathrow Do-Minimum, NWR and ENR MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as bar with hatched shading.

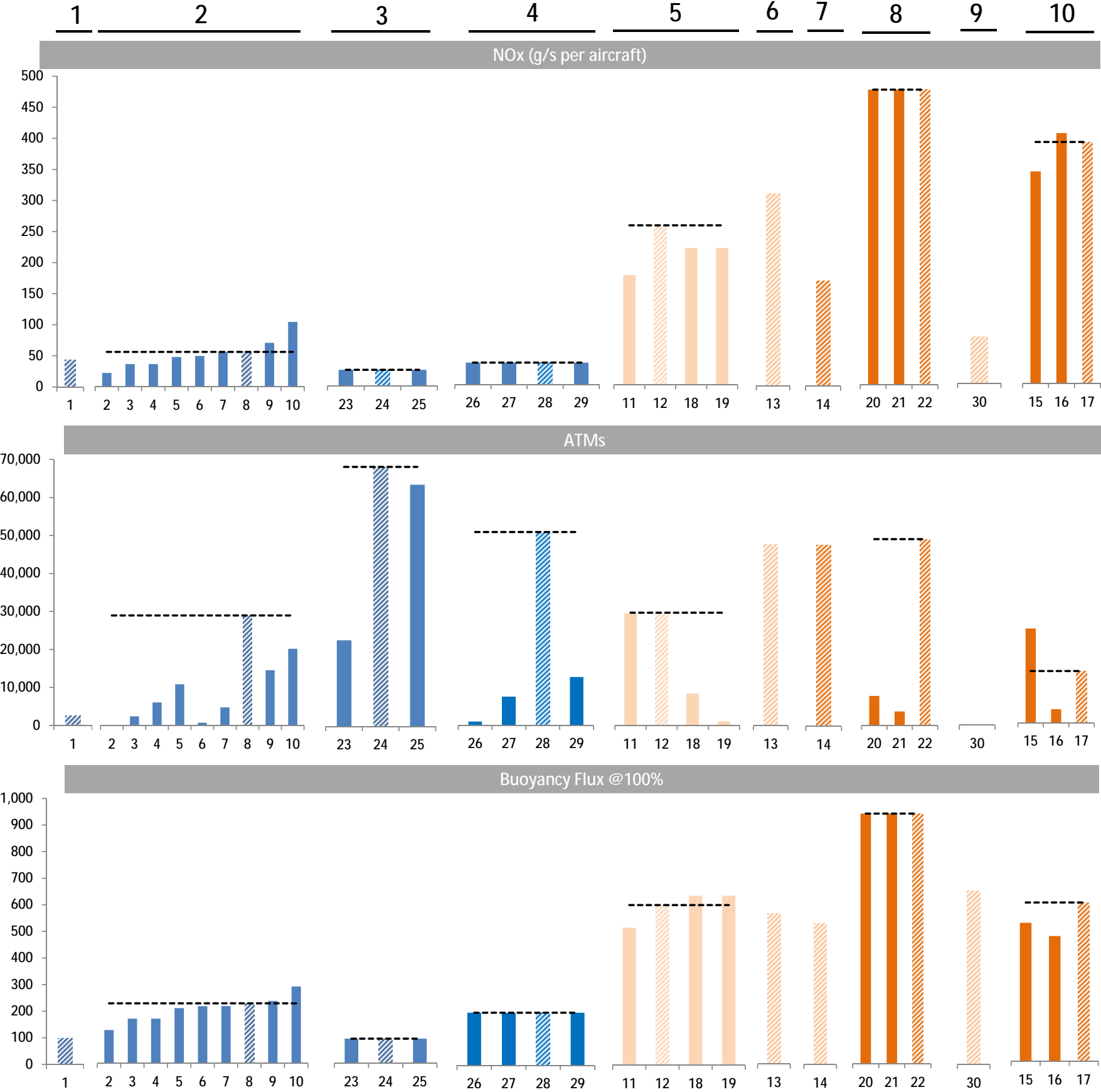
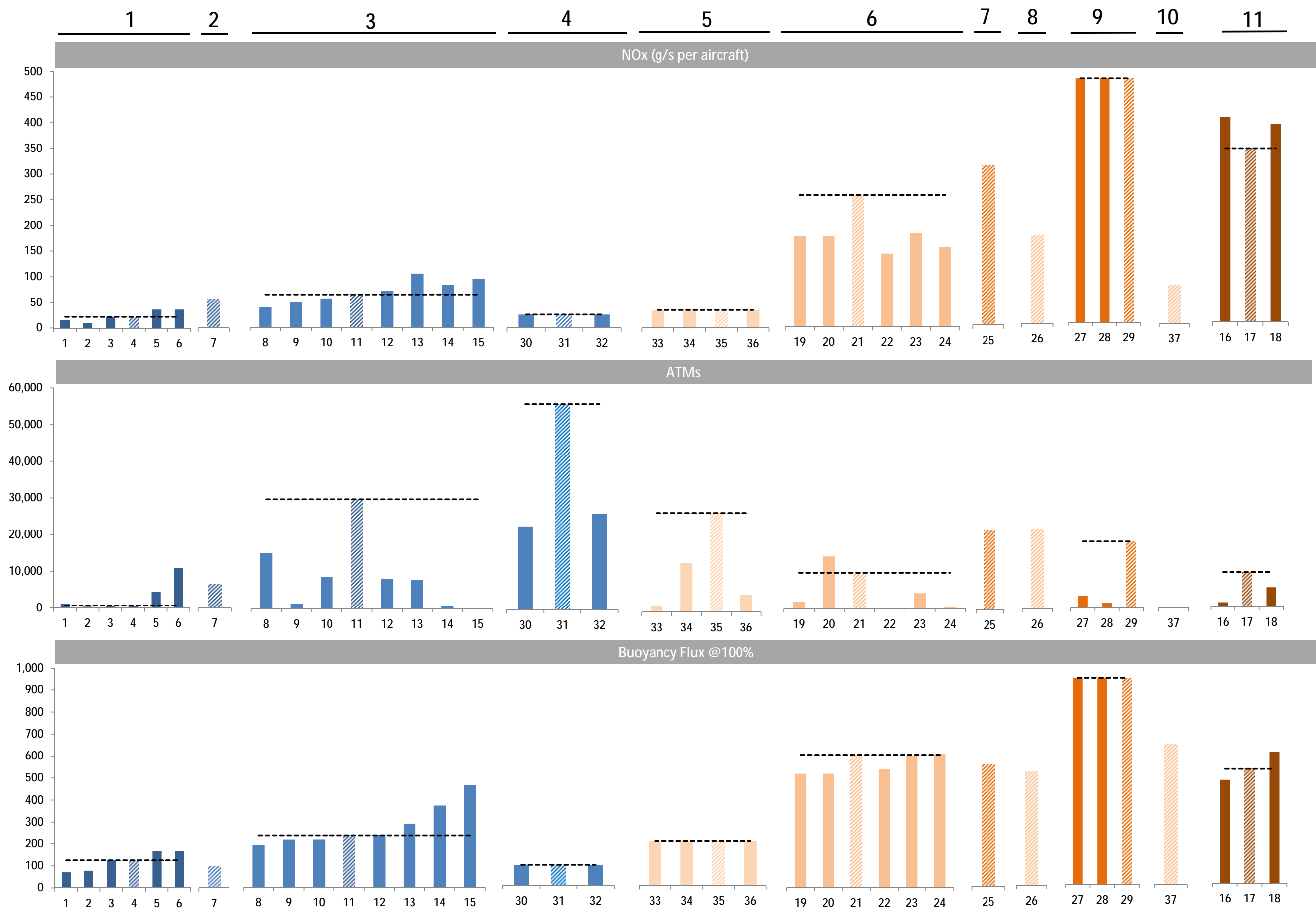


Figure B4 - MCAT Assignments Gatwick Do-Minimum and 2R MCAT group shown along top axis. Aircraft ID shown along bottom axis. Lead aircraft shown as bar with hatched shading.



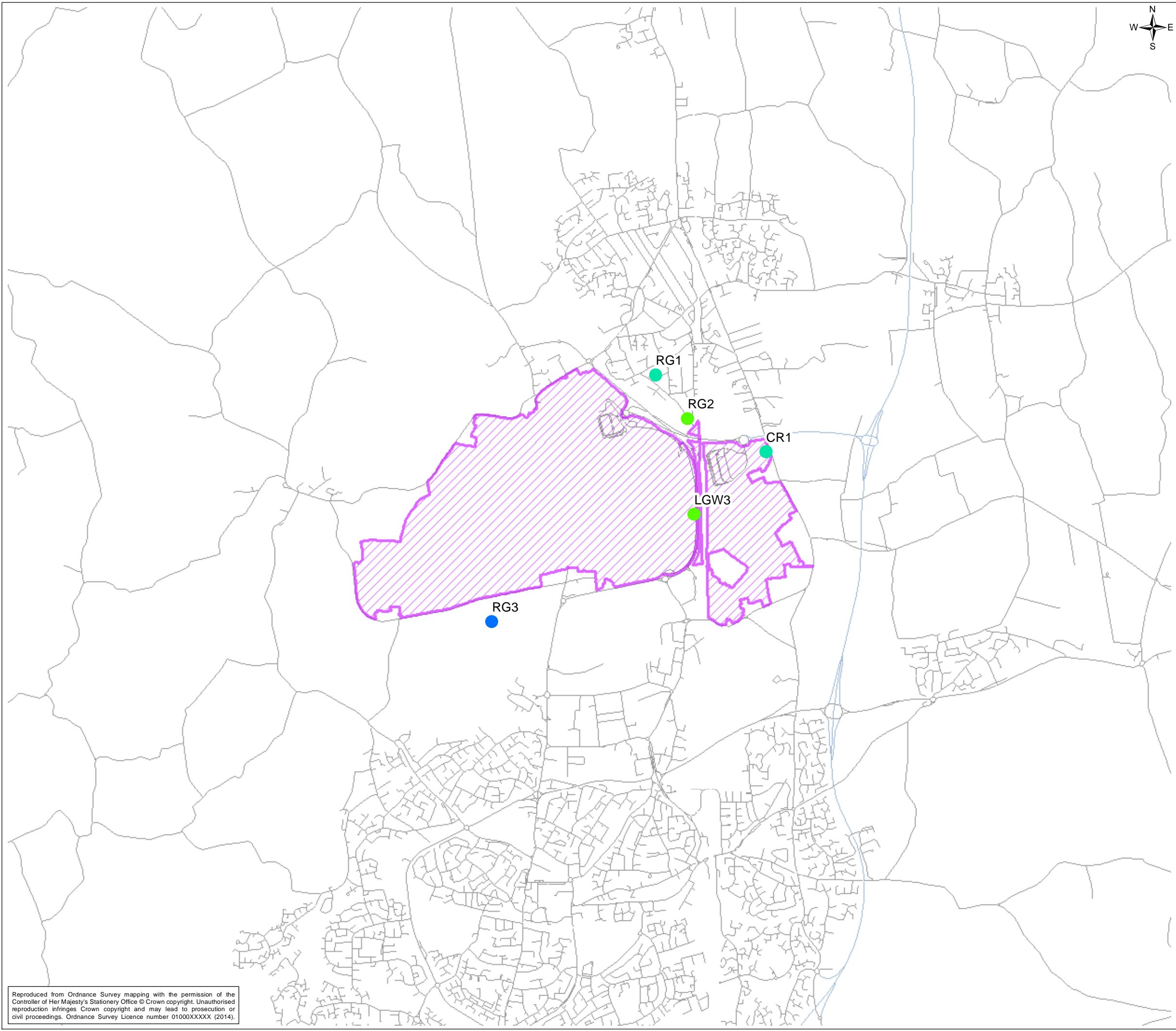


FIGURE E1

Legend

Measured Annual Mean NO₂ Concentrations (µg/m³) - 2009

- < 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- > 60

Gatwick Existing Boundary



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<div>Project</div> <div>B4160007 - DfT Airports Commission Environmental Support</div>						
<div>Drawing Title</div> <div>Location of Monitoring Sites in the Gatwick Study Area Used for 2009 Model Verification</div>						
<div>Drawing Status</div>						
Scale @ A3			1:40,000		DO NOT SCALE	
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<div>Drawing No.</div> <div>FIGURE E1</div>						
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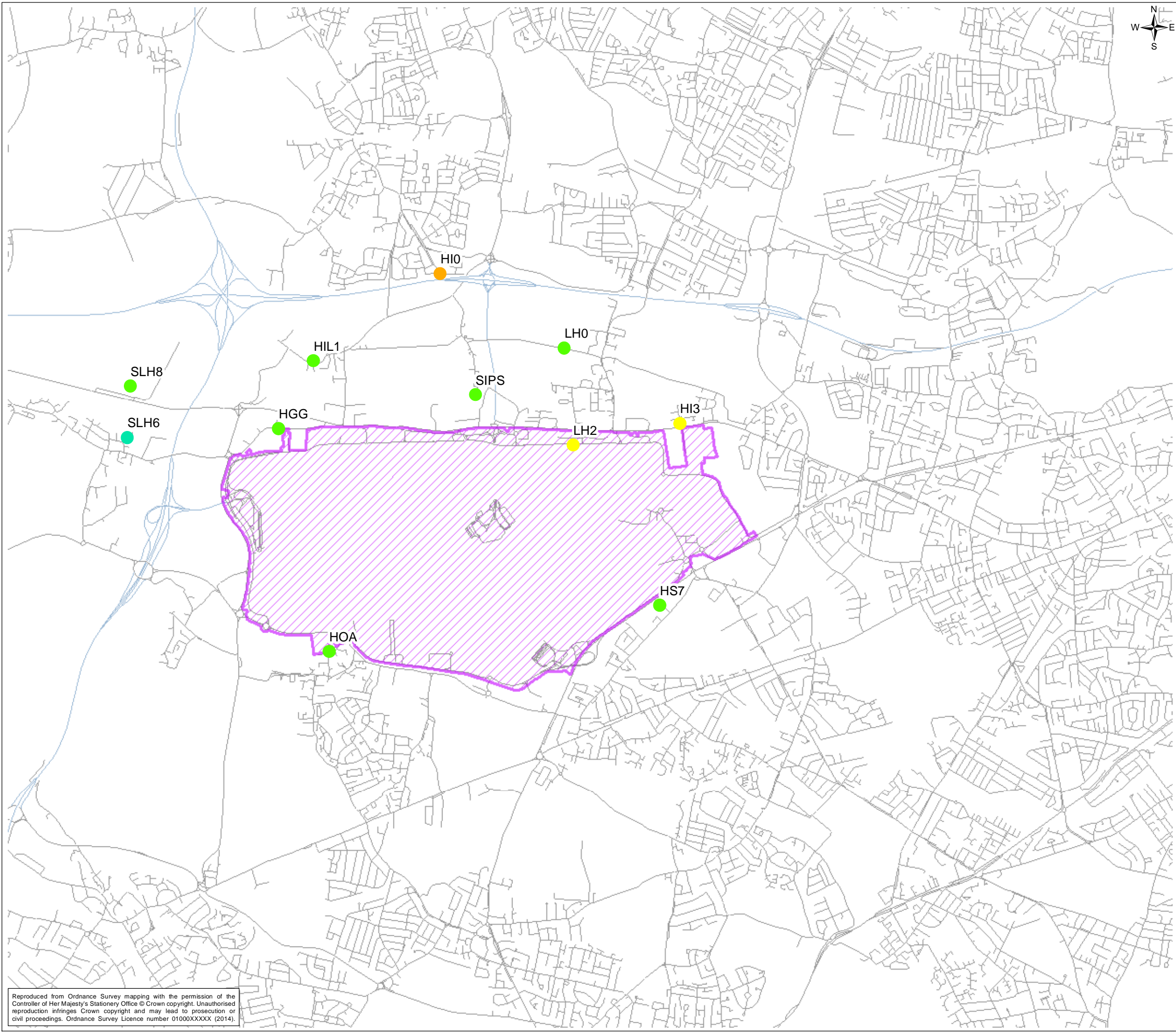


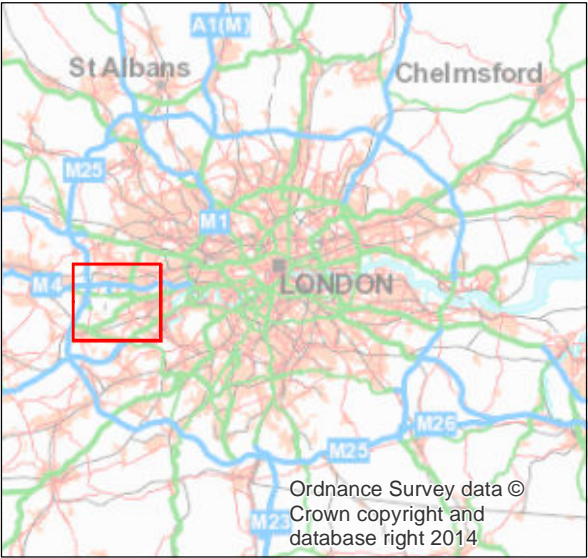
FIGURE E2

Legend

Measured Annual Mean NO₂ Concentrations (µg/m³) - 2009

- < 10
- 10 - 20
- 20 - 30
- 30 - 40
- 40 - 50
- 50 - 60
- > 60

Heathrow Existing Boundary



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Project <div>B4160007 - DfT Airports Commission Environmental Support</div>						
Drawing Title <div>Location of Monitoring Sites in the Heathrow Study Area Used for 2009 Model Verification</div>						
Drawing Status						
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Client No.						
Drawing No.						
FIGURE E2						
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