


Norwich - Northern Distributor Road

Major Scheme Business Case
Sensitivity Tests for DfT

Dependent Development

Volume 3 – Appendices

(Appendix E Part 1)

December 2009
Norfolk County Council

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Mott MacDonald

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
01	03/12/2009	Mo Shahkarami	Brian Witten Chris White	Gerry Kelly	Final

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Please see Appendix Volume 2.

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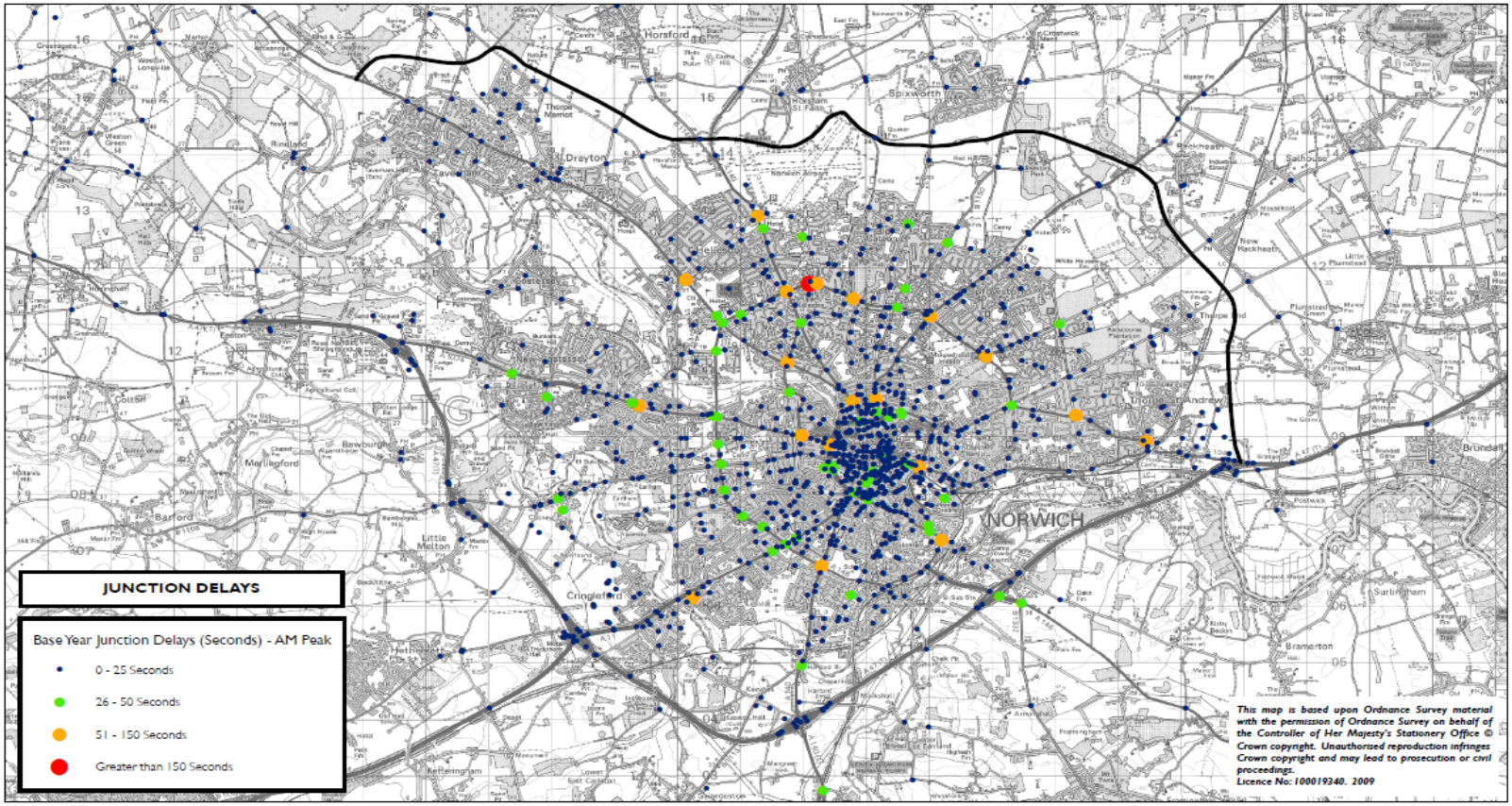

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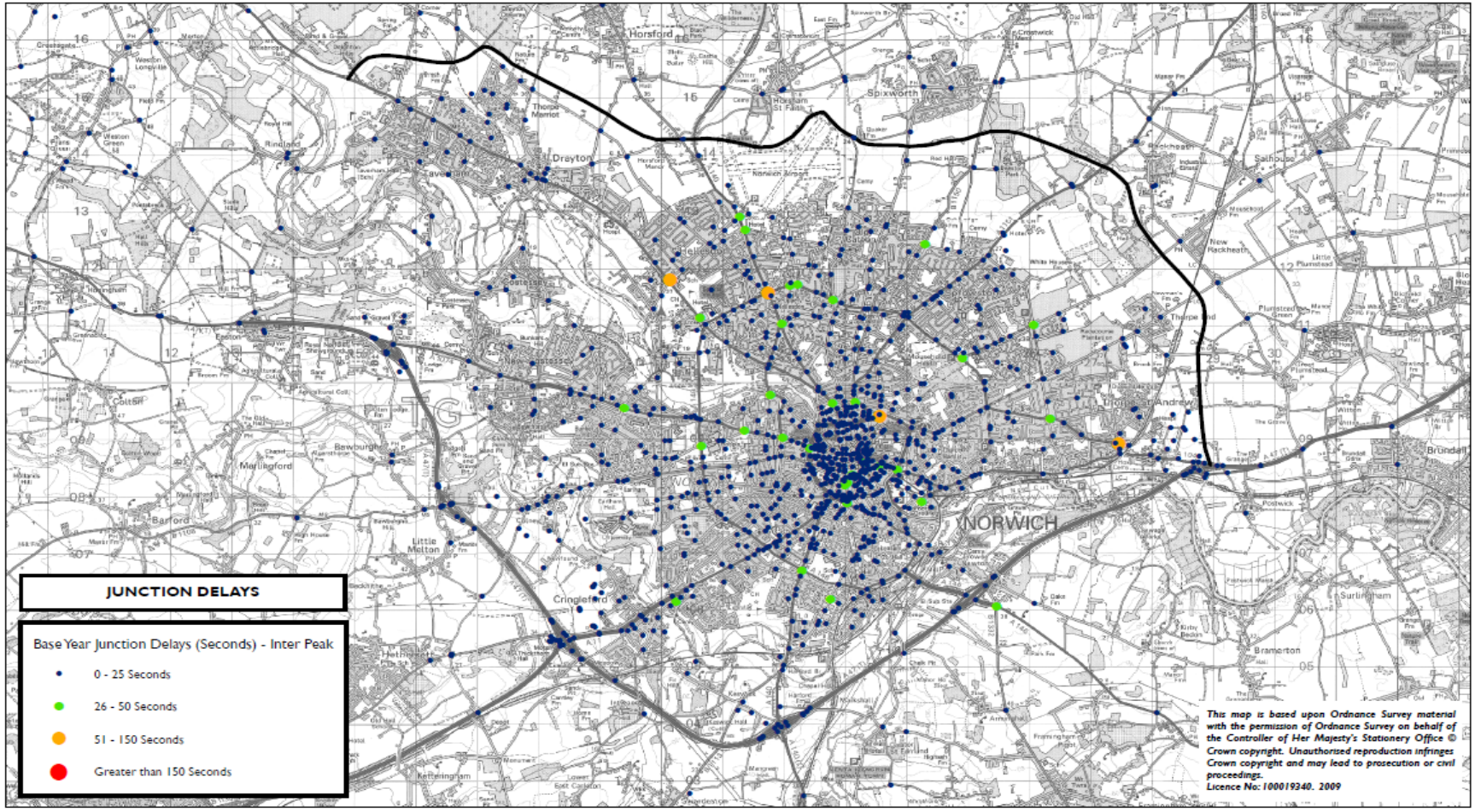
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
BASE YEAR (2006) - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	28/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NATS_06_16_26_v1	
DRAWN BY	SWC	28/10/09	SCALE	FILE No.
CHECKED BY	BW	28/10/09	Not To Scale	.....
PROJECT TITLE	NNDR MSBC			

Figure E.2: 2006 Base Year Junction Delays - IP



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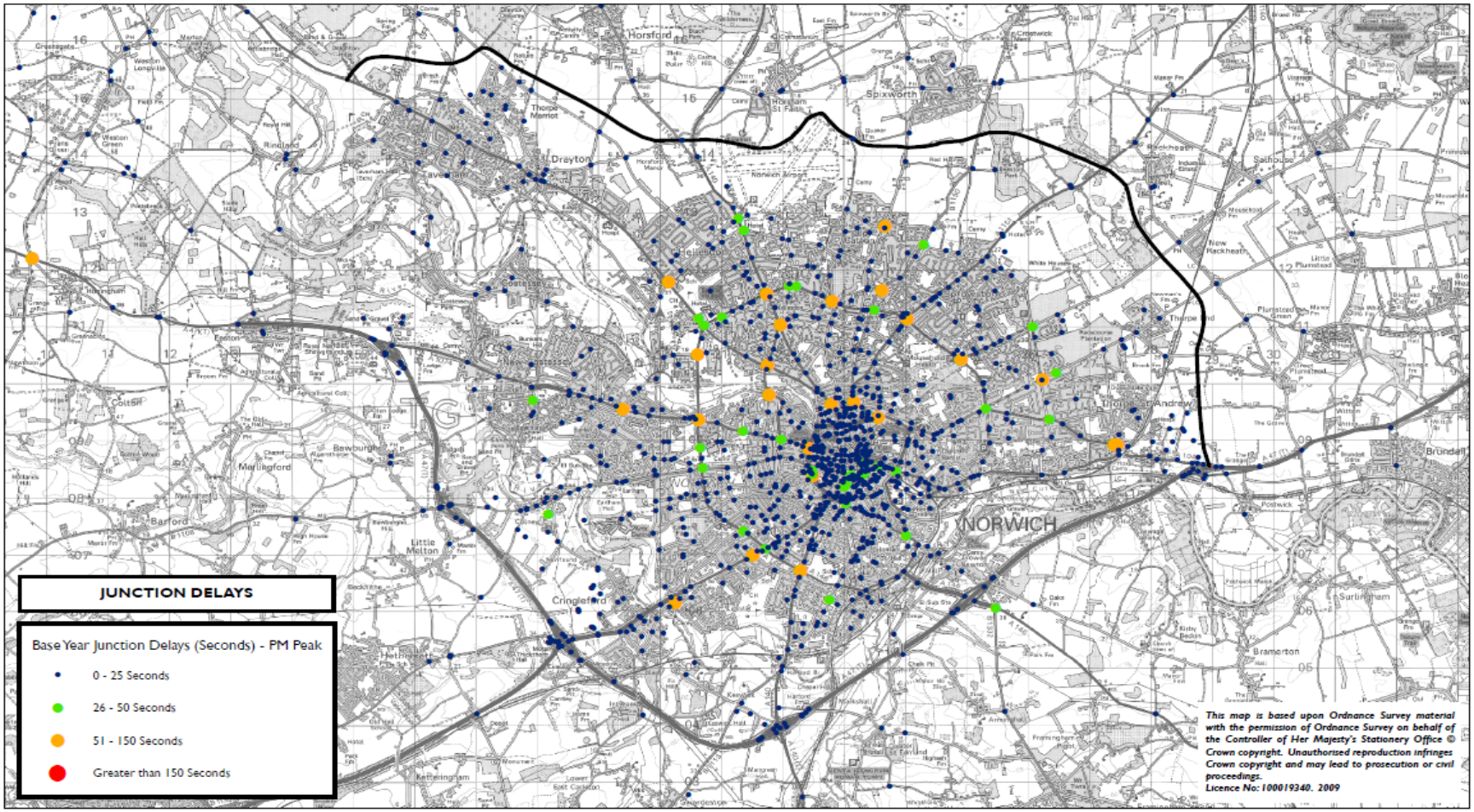
Junction Delay Range Plots
BASE YEAR (2006) - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	28/10/09
B	----	----	----
C	----	----	----
D	----	----	----

	INIT.	DATE	REF: NATS_06_16_26_v1	
DRAWN BY	SWC	28/10/09	SCALE	FILE No.
CHECKED BY	BW	28/10/09	Not To Scale	----
PROJECT TITLE	NNDR MSBC			

Figure E.3: 2006 Base Year Junction Delays – PM Peak



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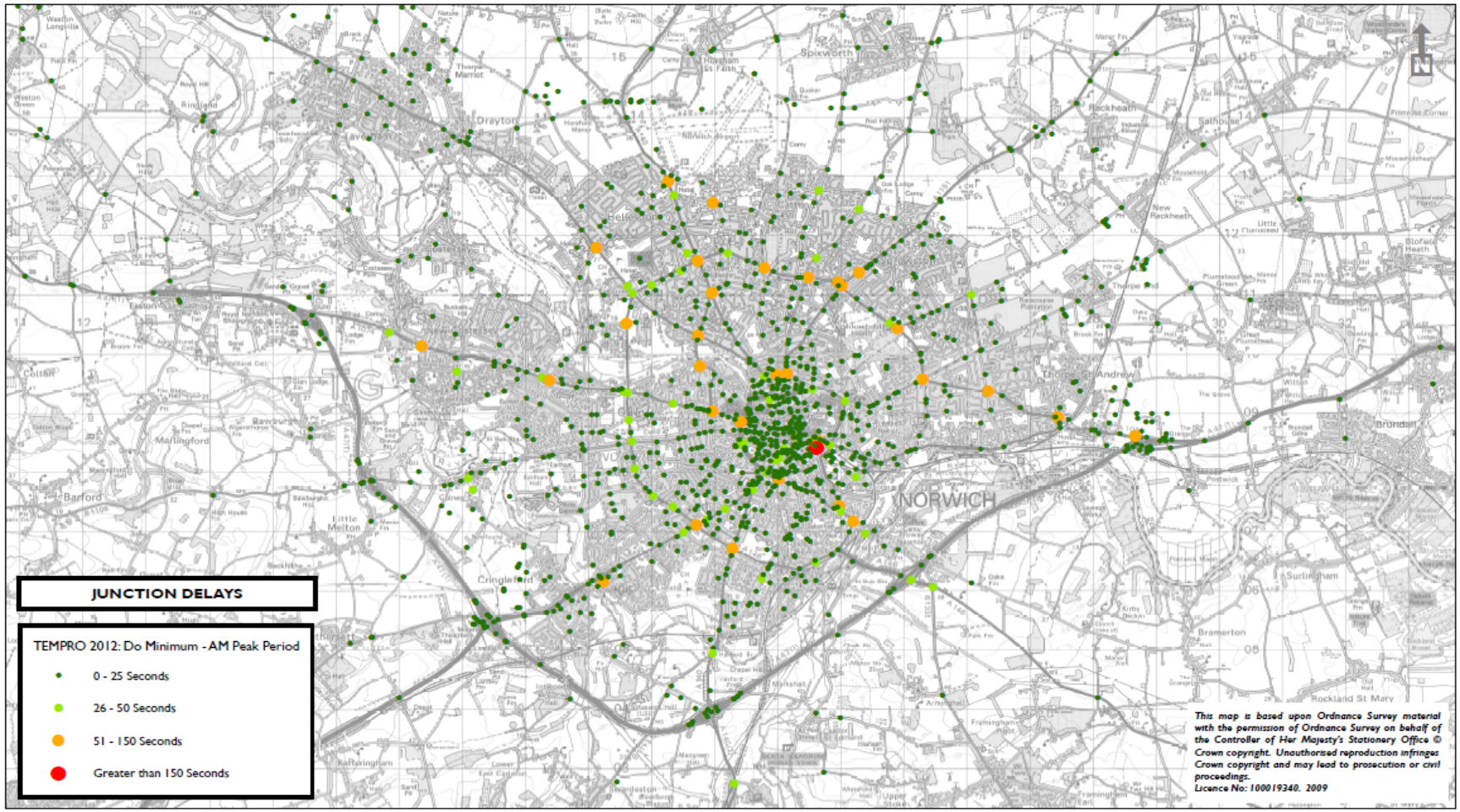
Junction Delay Range Plots
BASE YEAR (2006) - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	28/10/09
B	----	----	----
C	----	----	----
D	----	----	----

	INIT.	DATE	REF: NATS_06_16_26_v1	
DRAWN BY	SWC	28/10/09	SCALE	FILE No.
CHECKED BY	BW	28/10/09	Not To Scale	----
PROJECT TITLE	NNDR MSBC			

Figure E.4: 2012 TEMPRO 5.4 Do Minimum Junction Delays – AM Peak



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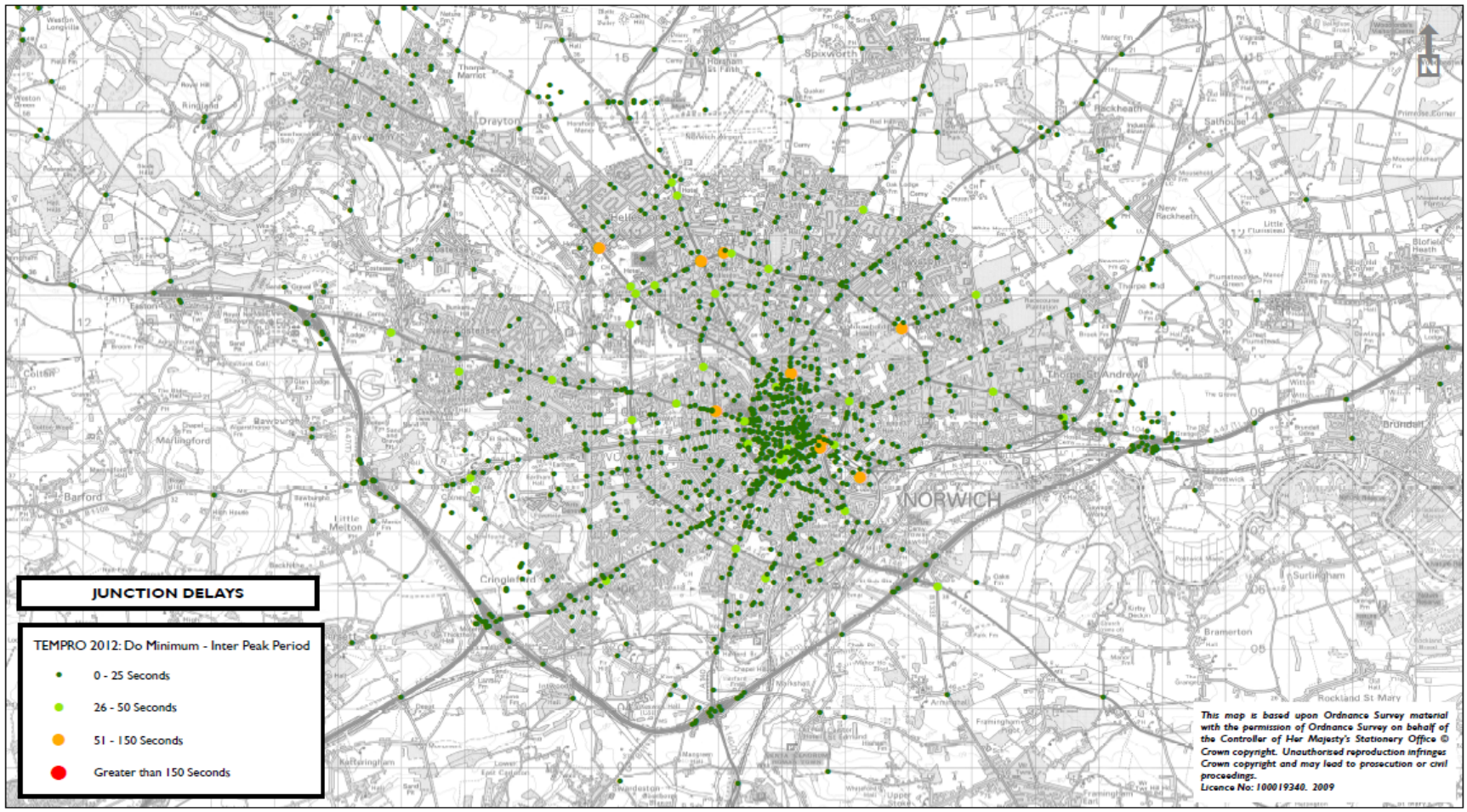
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2012 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	DWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.5: 2012 TEMPRO 5.4 Do Minimum Junction Delays - IP



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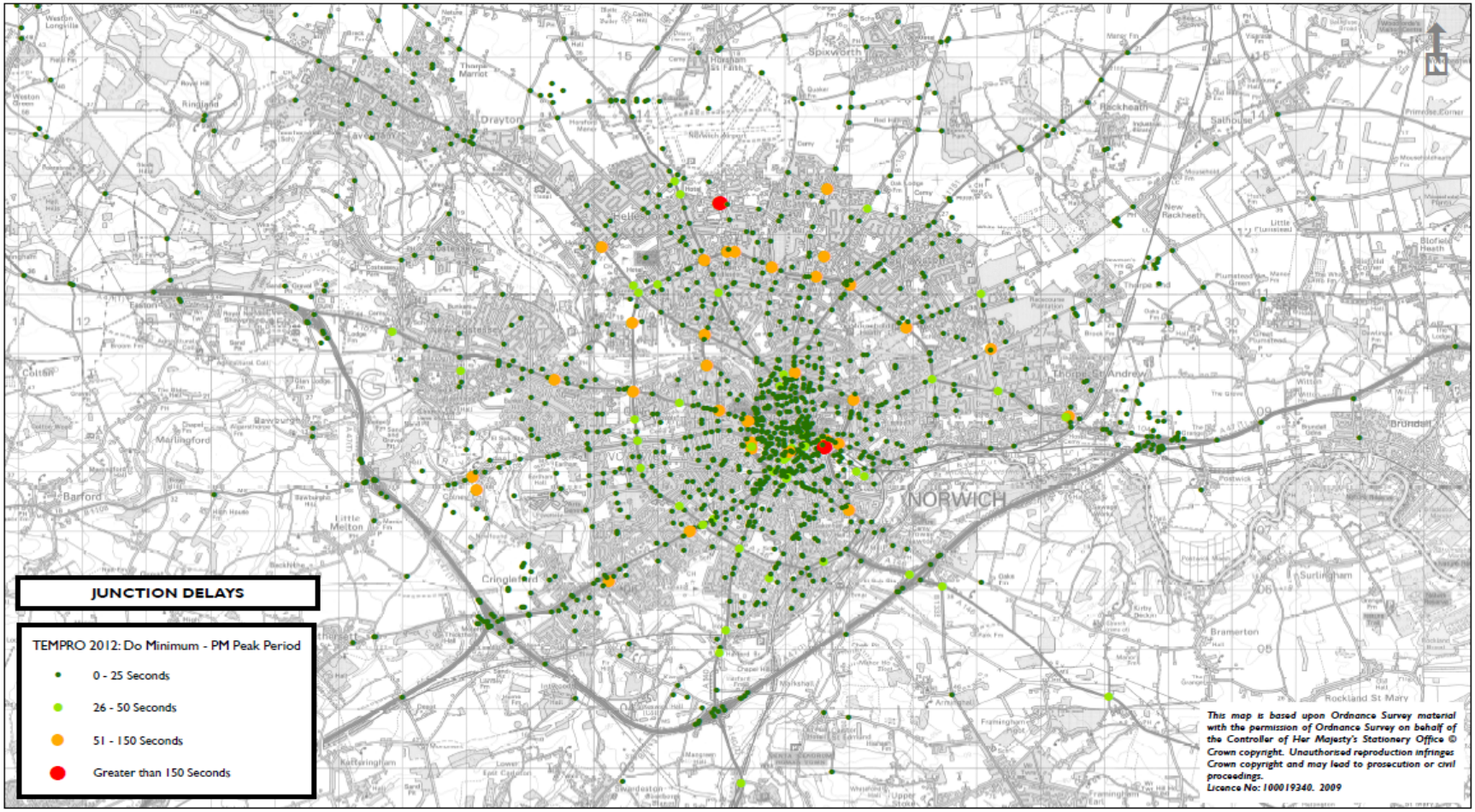
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2012 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.6: 2012 TEMPRO 5.4 Do Minimum Junction Delays – PM Peak



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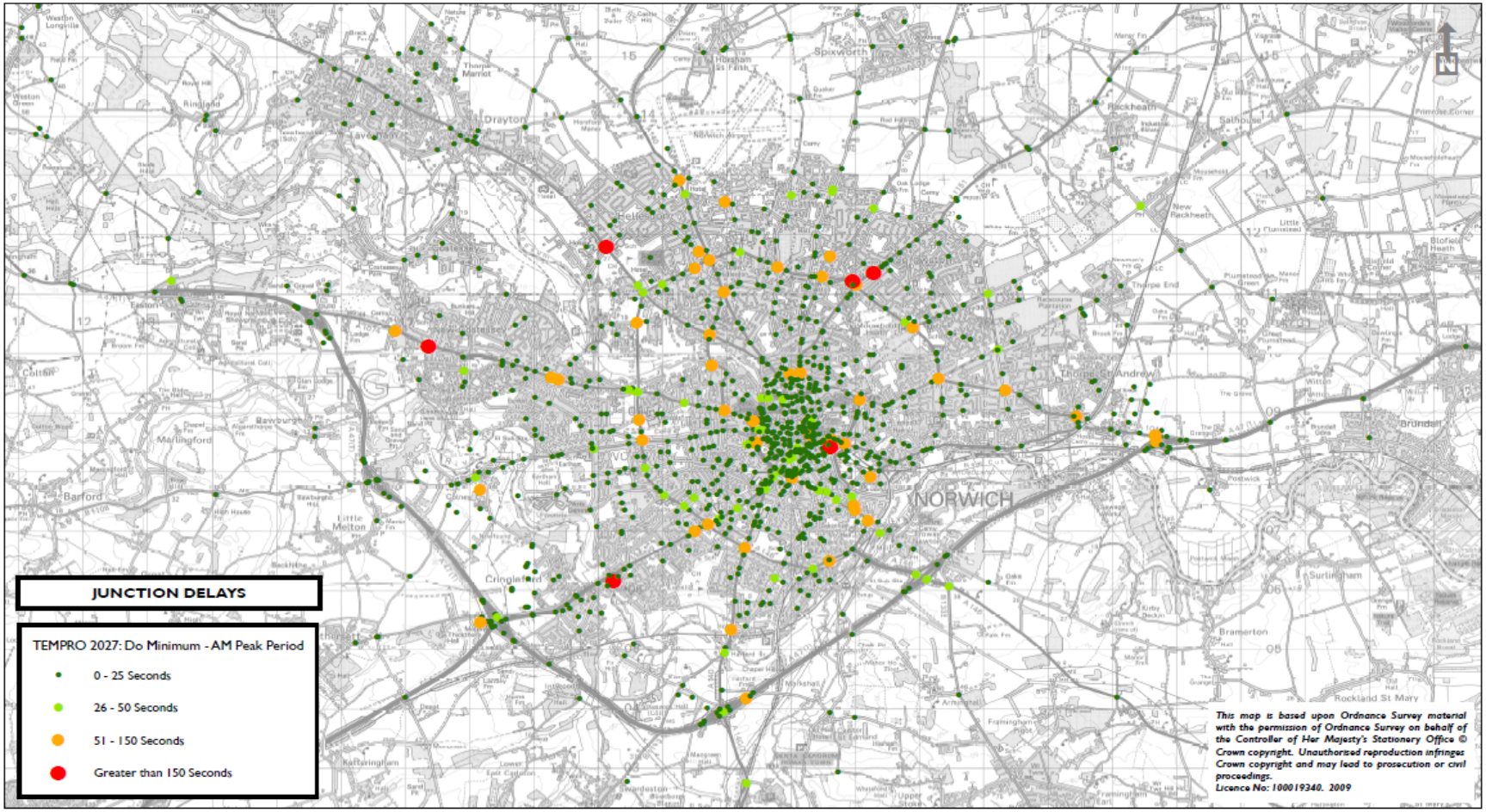
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2012 - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.7: 2027 TEMPRO 5.4 Do Minimum Junction Delays – AM Peak



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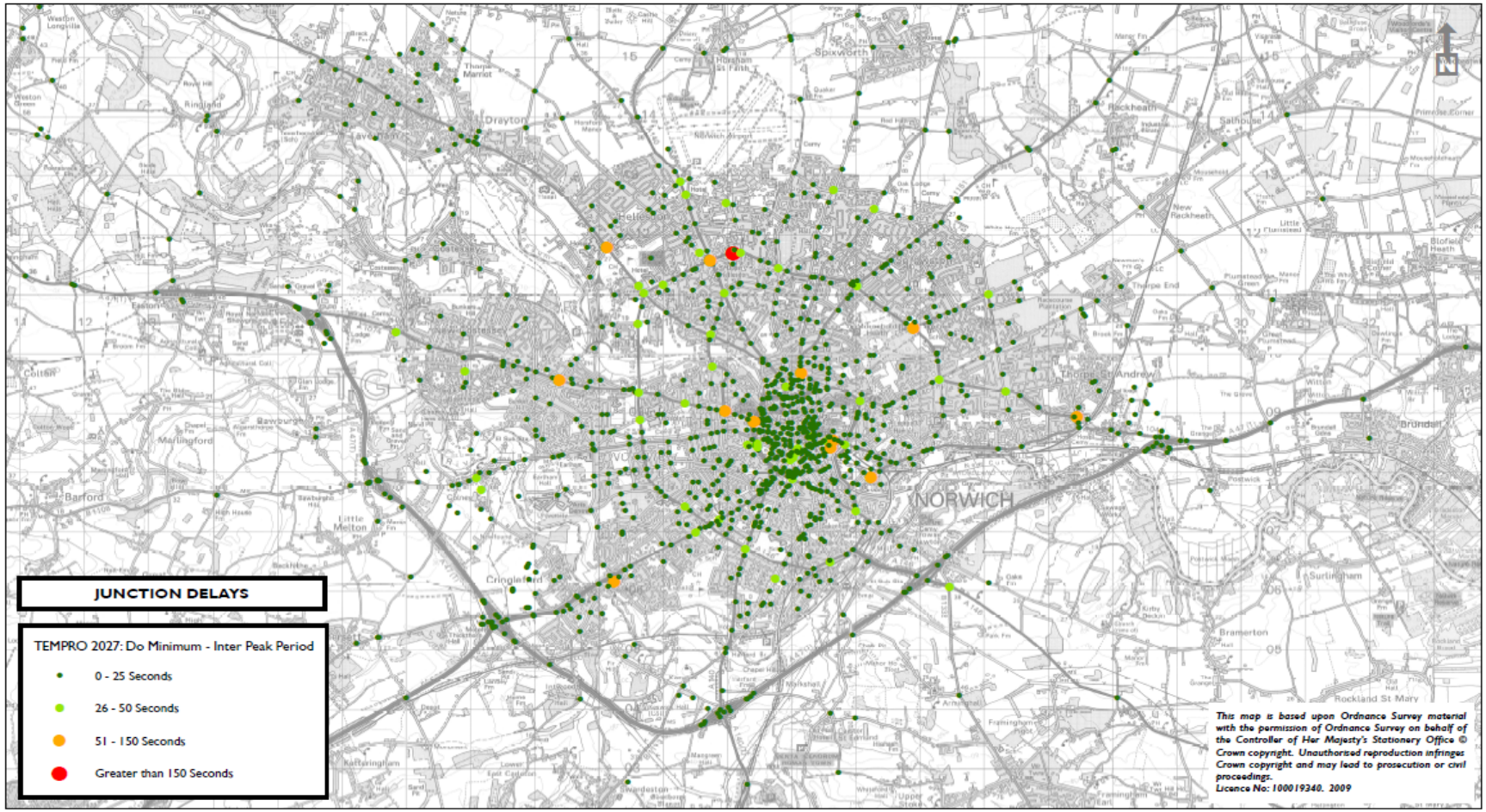
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2027 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE	NNDR MSBC			

Figure E.8: 2027 TEMPRO 5.4 Do Minimum Junction Delays - IP



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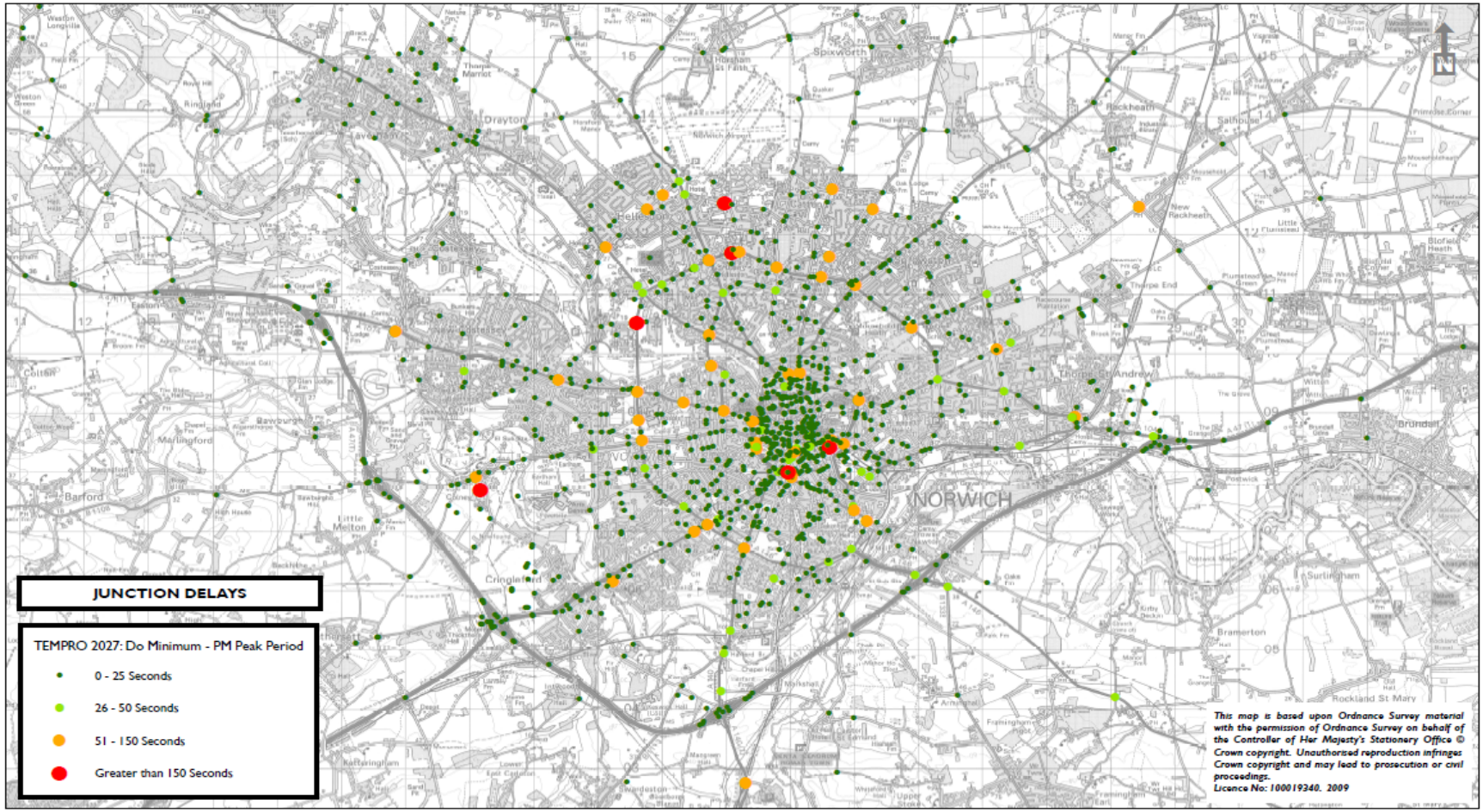
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2027 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.9: 2027 TEMPRO 5.4 Do Minimum Junction Delays – PM Peak



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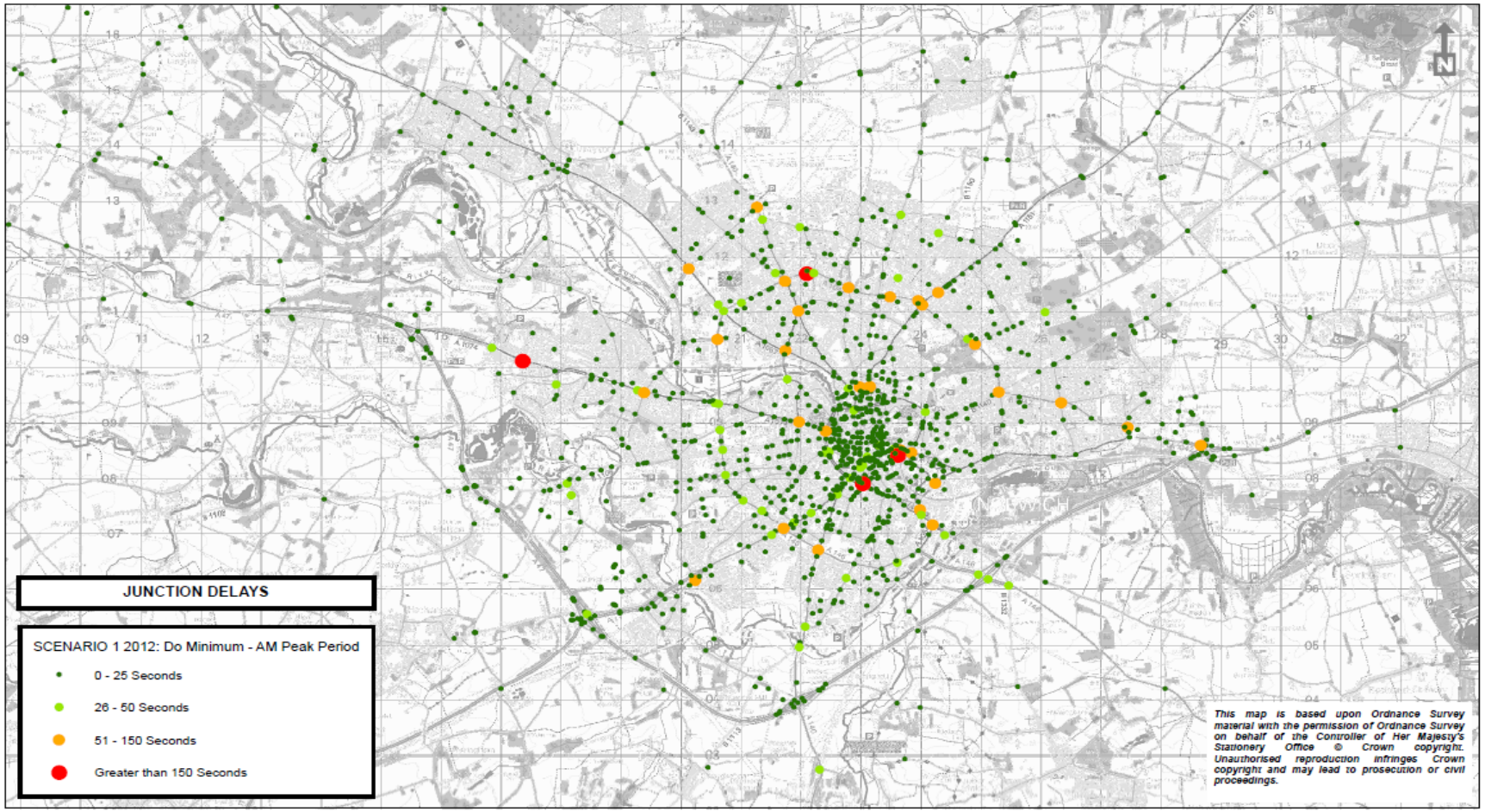
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
TEMPRO 5.4
Do Minimum 2027 - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.10: 2012 Scenario 1 Do Minimum Junction Delays – AM Peak



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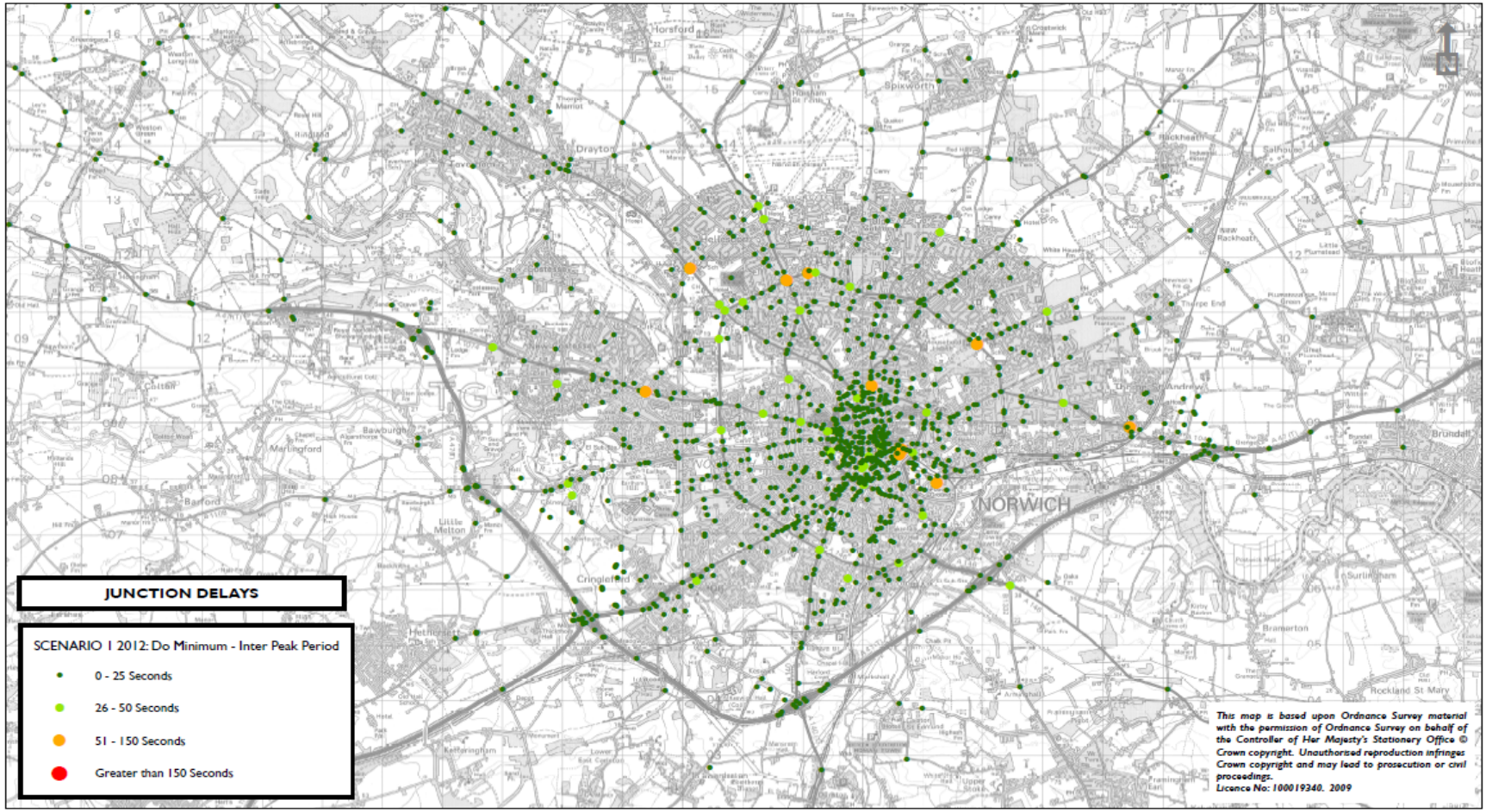
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2012 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	-----	-----	-----
C	-----	-----	-----
D	-----	-----	-----

	INIT.	DATE	REF: NDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	-----
PROJECT TITLE	NNDR MSBC			

Figure E.11: 2012 Scenario 1 Do Minimum Junction Delays - IP



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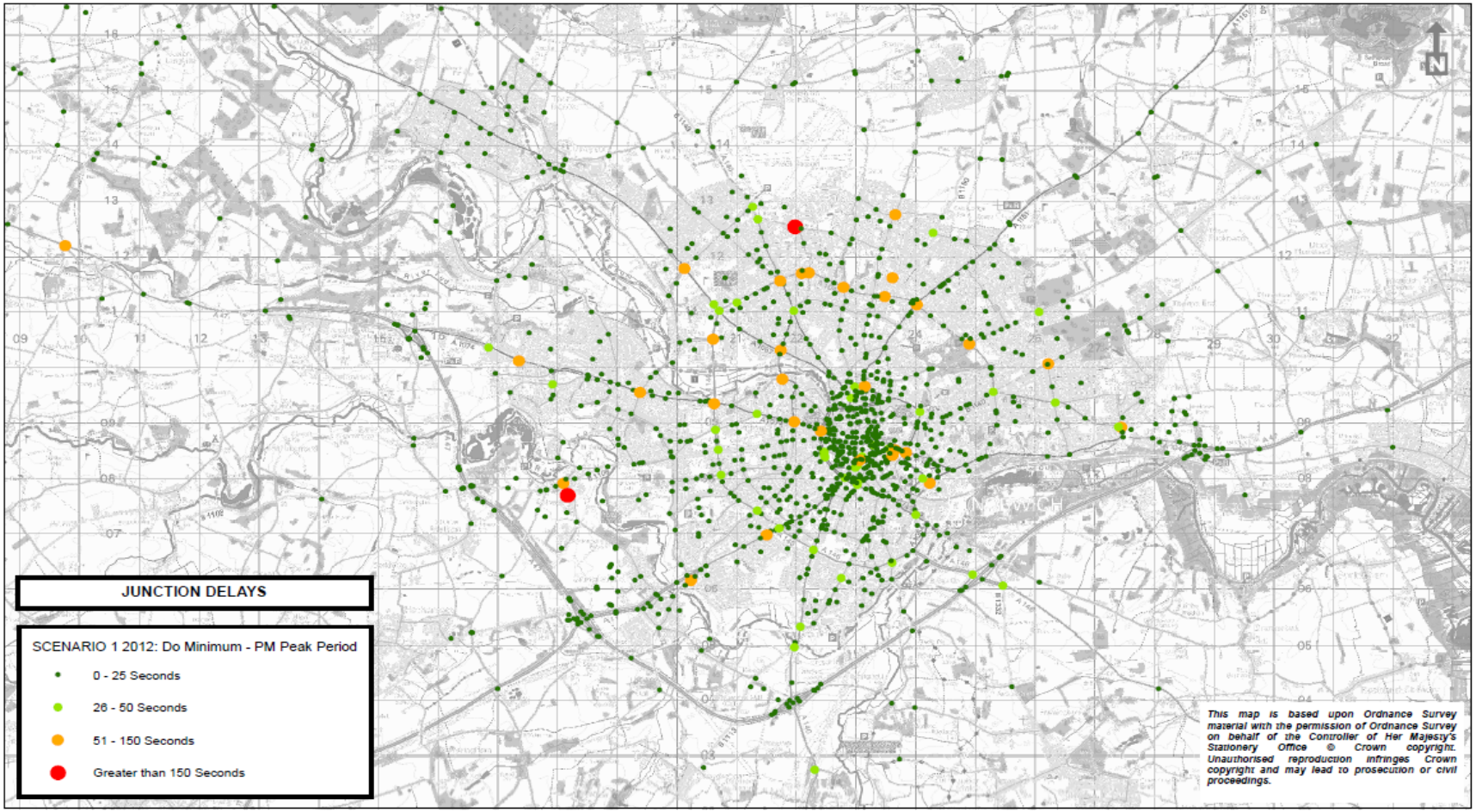
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2012 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	DWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE	NNDR MSBC			

Figure E.12: 2012 Scenario 1 Do Minimum Junction Delays – PM Peak



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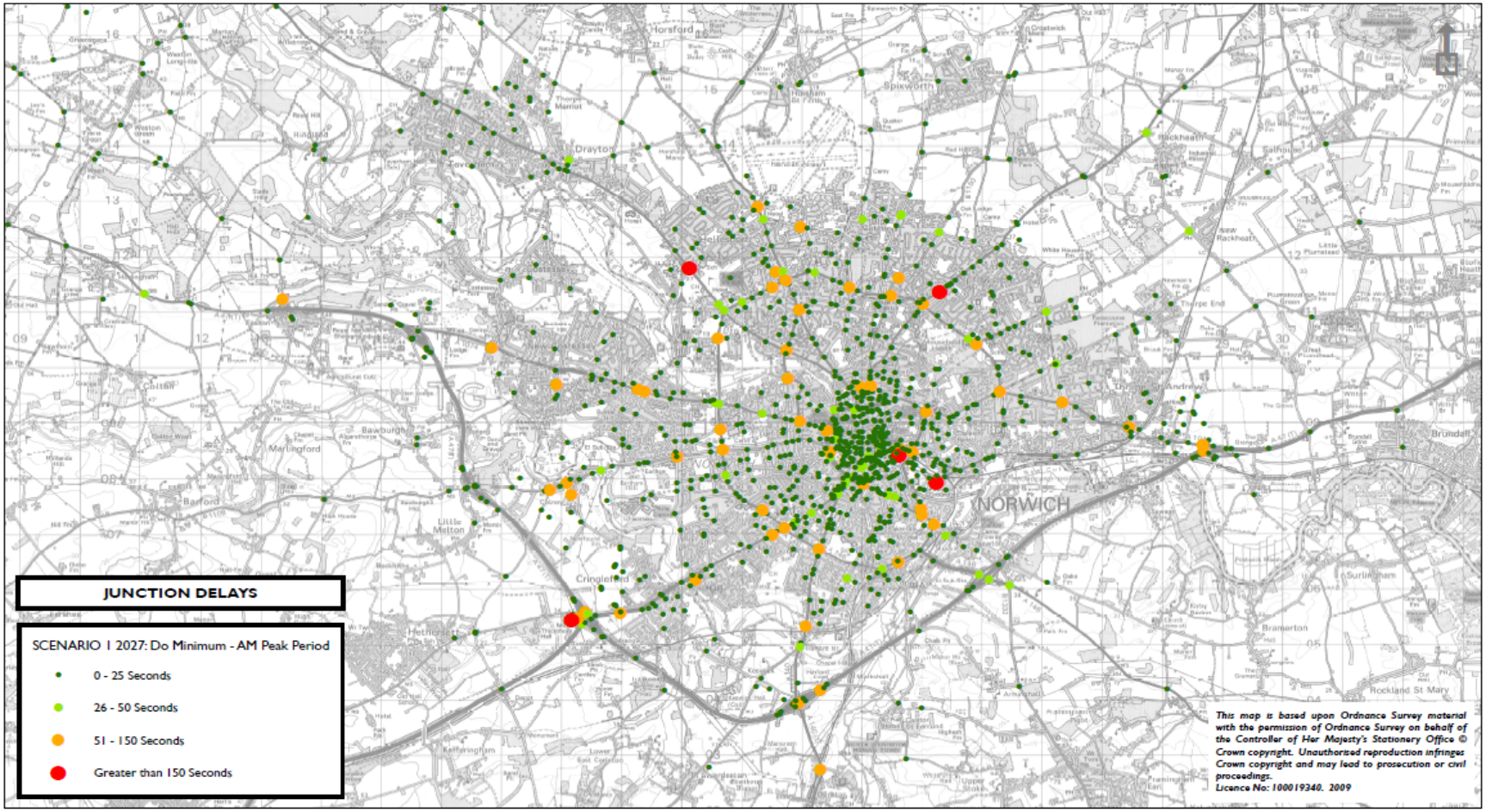
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2012 - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	-----	-----	-----
C	-----	-----	-----
D	-----	-----	-----

	INIT.	DATE	REF:NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	-----
PROJECT TITLE				
NNDR MSBC				

Figure E.13: 2027 Scenario 1 Do Minimum Junction Delays – AM Peak



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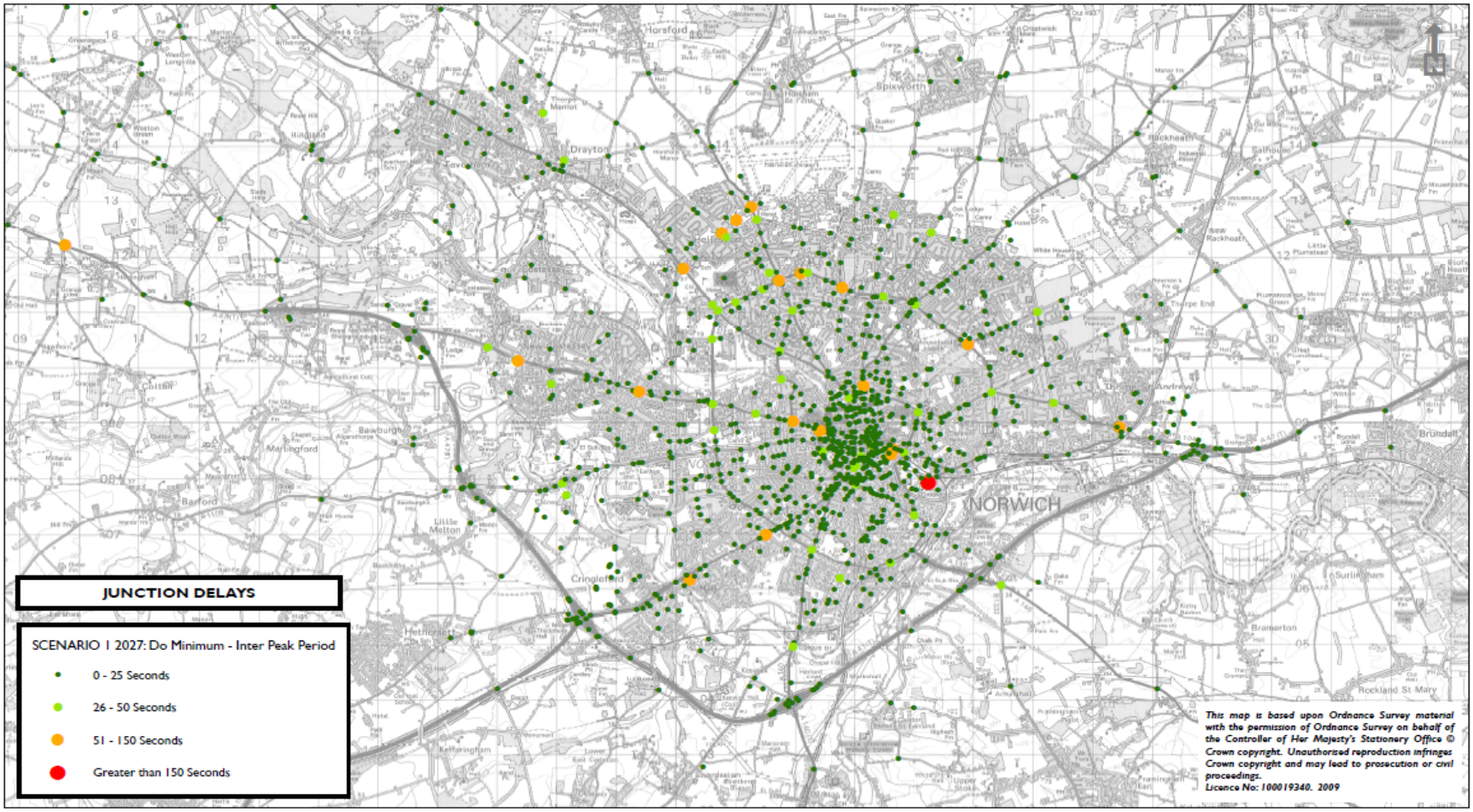
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2027 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.14: 2027 Scenario 1 Do Minimum Junction Delays - IP



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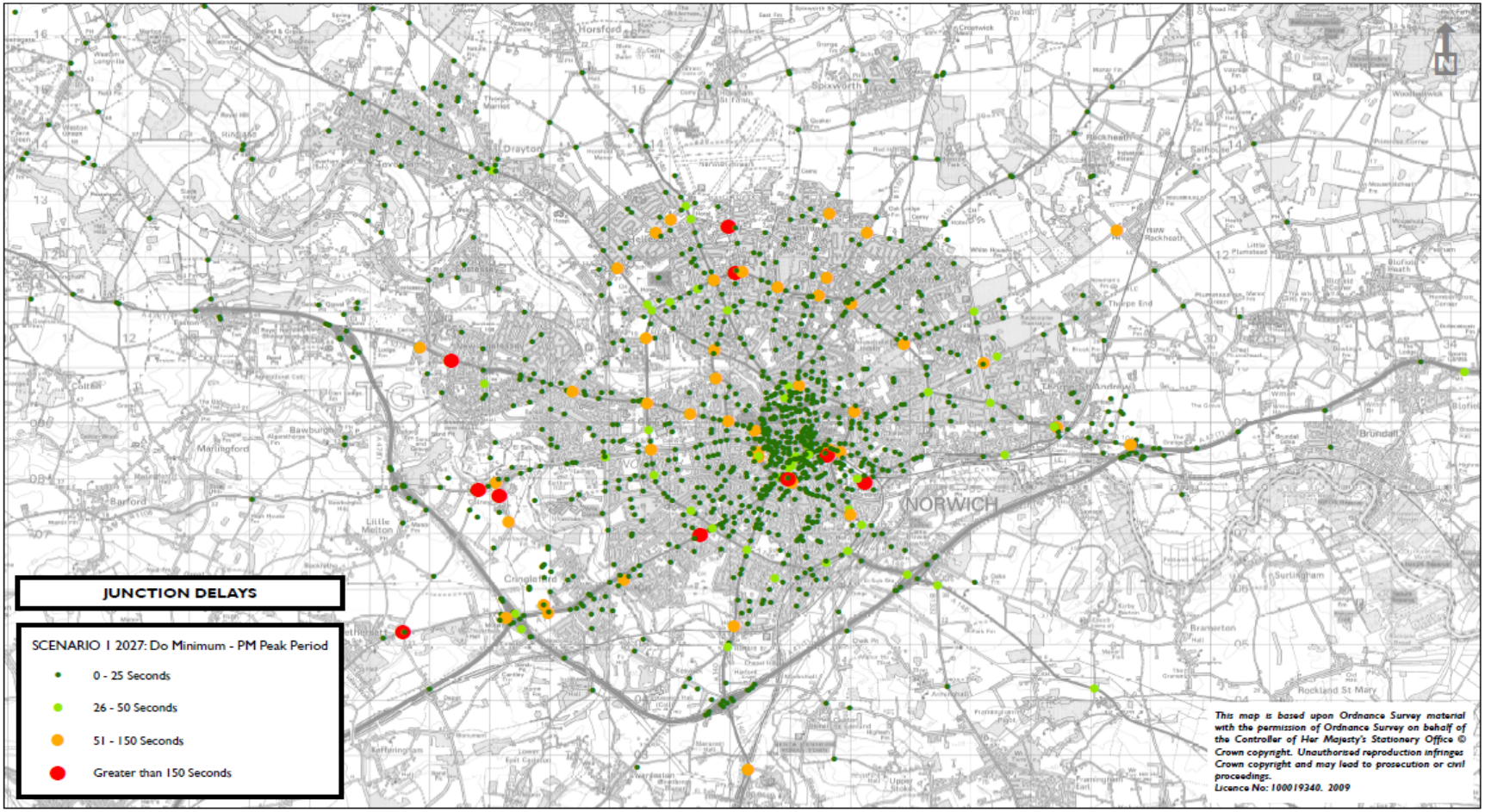
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2027 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.15: 2027 Scenario 1 Do Minimum Junction Delays – PM Peak



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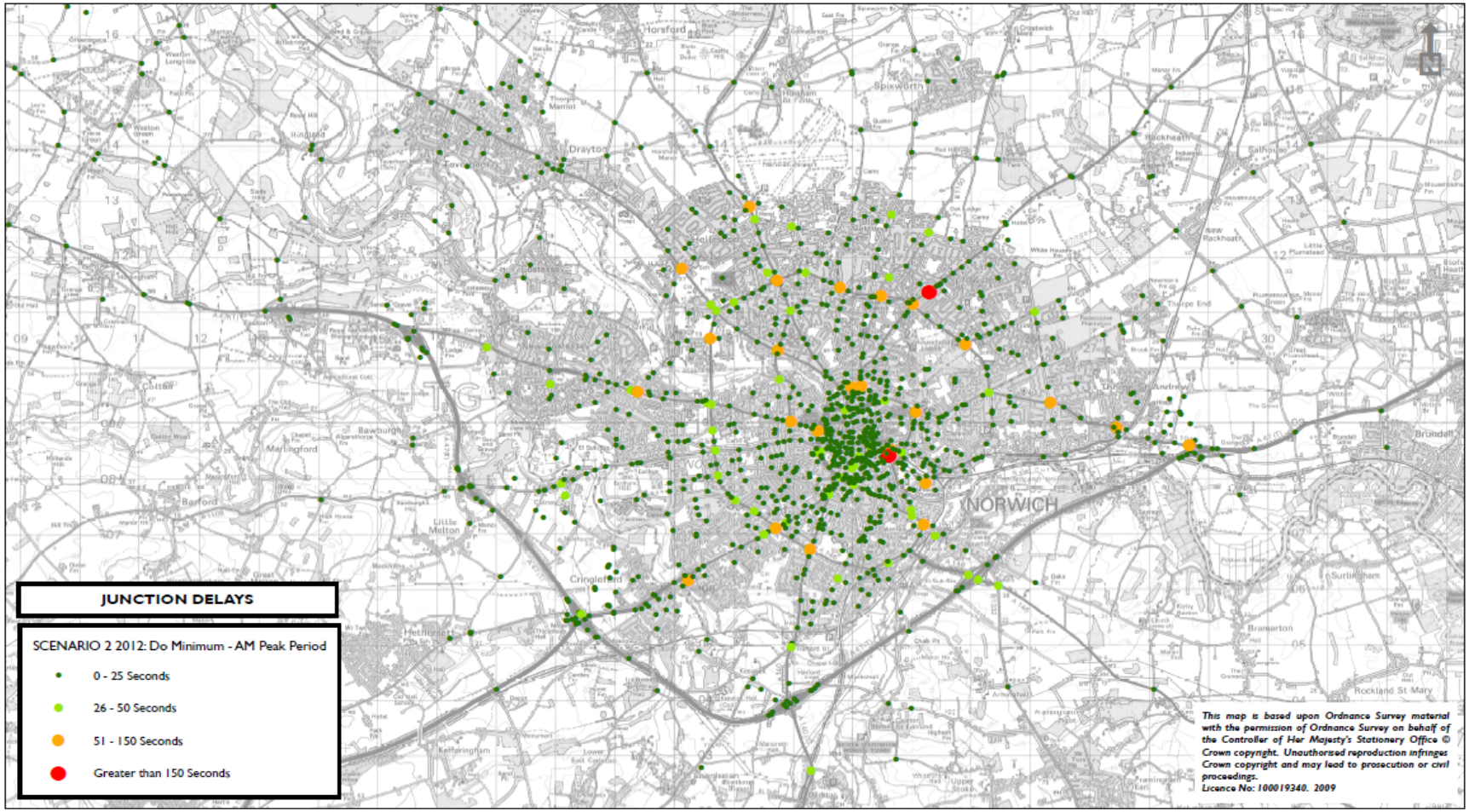
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
SCENARIO 1 (exc. Dependent Development A)
Do Minimum 2027 - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE	NNDR MSBC			

Figure E.16: 2012 Scenario 2 Do Minimum Junction Delays – AM Peak



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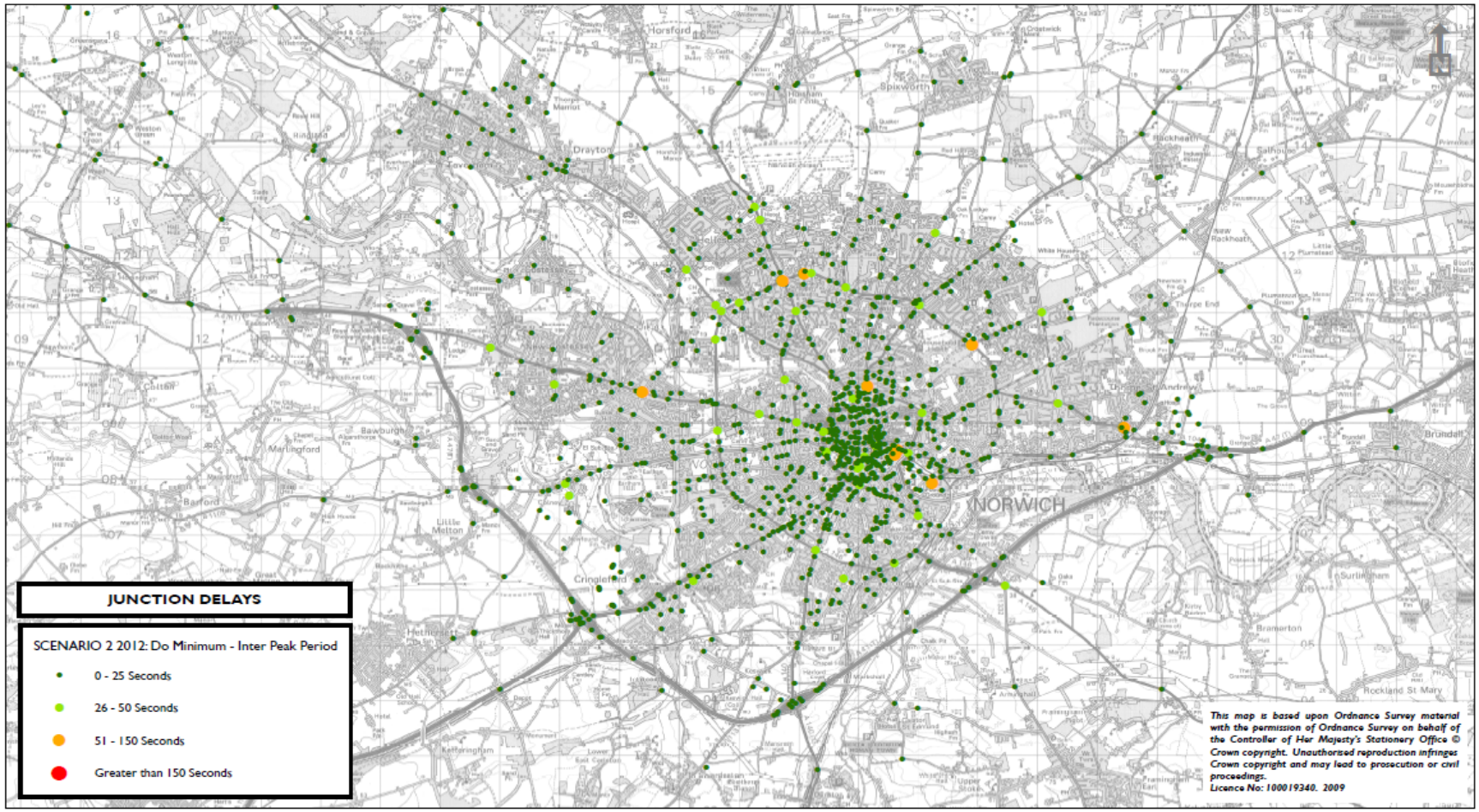
Junction Delay Range Plots
SCENARIO 2 (all JCS Development)
Do Minimum 2012 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE	NNDR MSBC			

Figure E.17: 2012 Scenario 2 Do Minimum Junction Delays - IP



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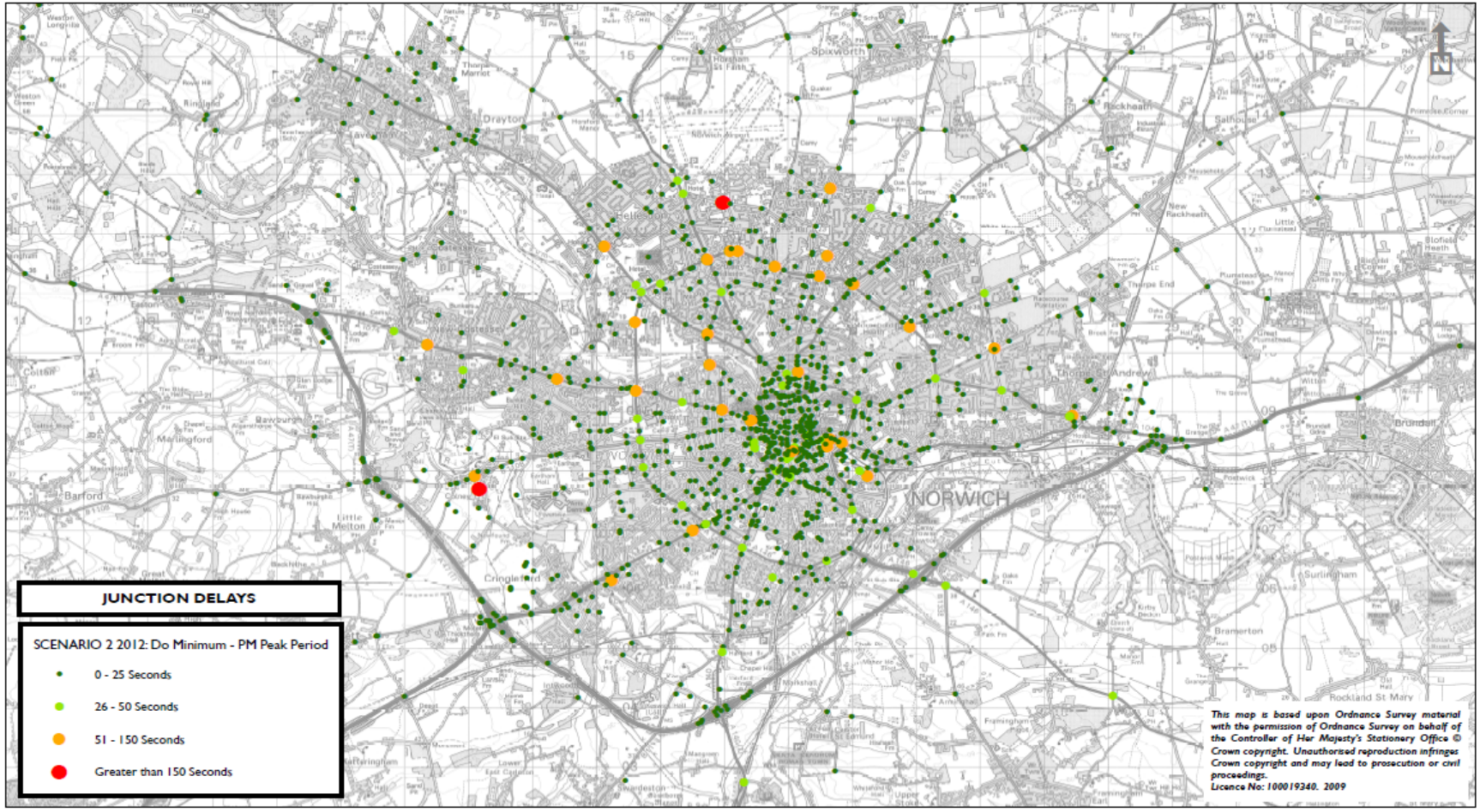
Junction Delay Range Plots
SCENARIO 2 (all JCS Development)
Do Minimum 2012 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	DWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.18: 2012 Scenario 2 Do Minimum Junction Delays – PM Peak



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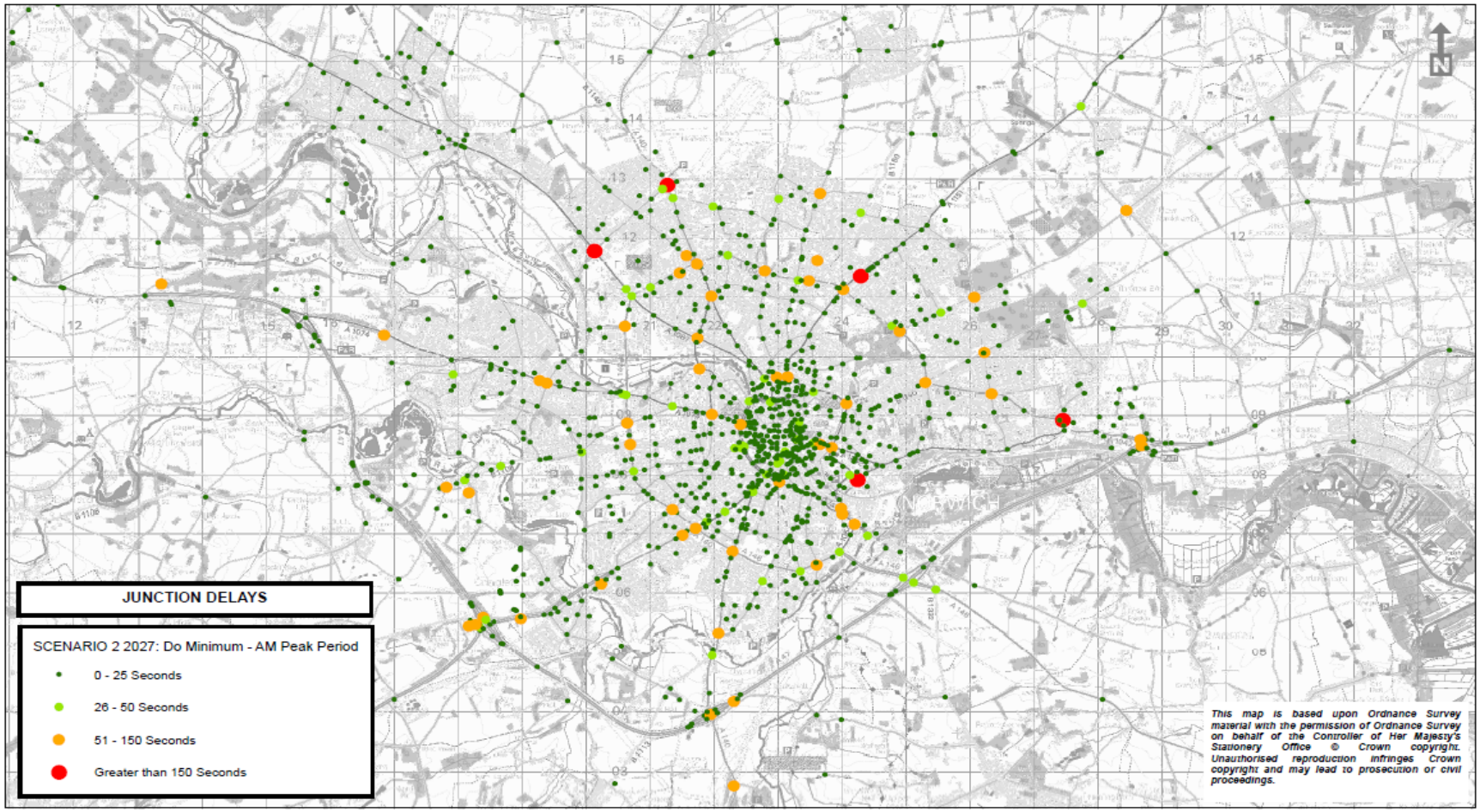
Junction Delay Range Plots
SCENARIO 2 (all JCS Development)
Do Minimum 2012 - PM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF: NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.19: 2027 Scenario 2 Do Minimum Junction Delays – AM Peak



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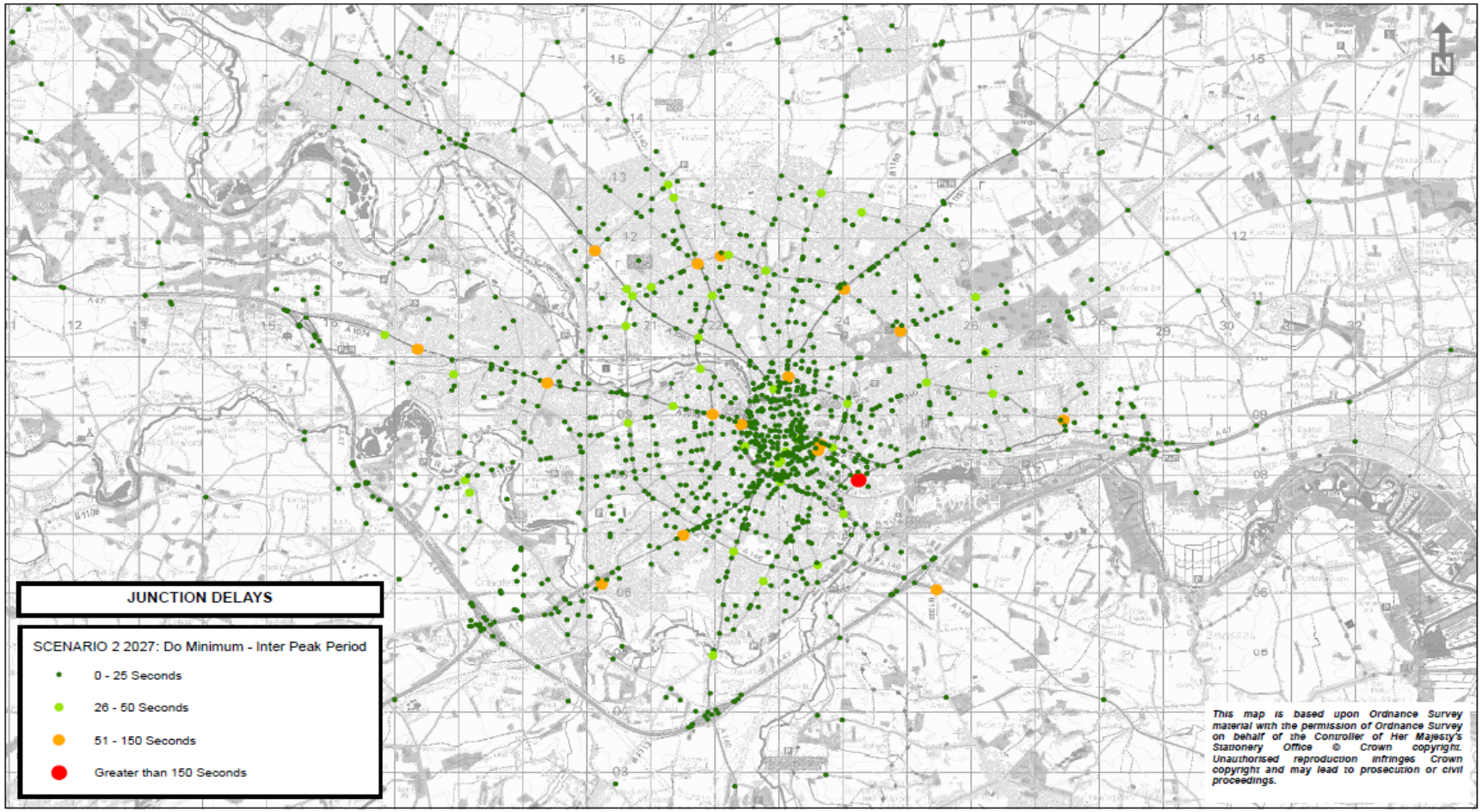
NNDR MSBC SENSITIVITY TESTS
Junction Delay Range Plots
SCENARIO 2 (all JCS Development)
Do Minimum 2027 - AM Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	18/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF:NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	18/10/09	SCALE	FILE No.
CHECKED BY	BW	18/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

Figure E.20: 2027 Scenario 2 Do Minimum Junction Delays - IP



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Do Minimum 2027 - Inter Peak

REV.	DESCRIPTION	CH'K'D	DATE
A	DRAFT	GW	16/10/09
B	.....	.....	.....
C	.....	.....	.....
D	.....	.....	.....

	INIT.	DATE	REF:NNDR_MSBC_Junction Delays	
DRAWN BY	SWC	16/10/09	SCALE	FILE No.
CHECKED BY	BW	16/10/09	Not To Scale	.....
PROJECT TITLE				
NNDR MSBC				

For Figures E.21 to E. 39, please see Appendix Volume 4

Appendix F. Vehicle over Capacity Ratio

Please see Appendices Volumes 5 & 6.

Appendix G. Traffic Flows (PCUs)

Please see Appendix Volume 2.

Appendix H. Trip Totals (PCUs)

Please see Appendix Volume 2.

Appendix I. PCU Kilometres

Please see Appendix Volume 2.