

APPENDIX 5D

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**Sensitivity Test on the  
Potential Air Quality  
Impact of a Lower % of  
LGV Travelling on SWC  
and the Section of DBL  
to the North of Ha Tsuen  
Interchange**

**Sensitivity Test on the Potential Air Quality Impact of a Lower Percentage of Light Goods Vehicle Travelling on SWC and the Section of DBL to the North of Ha Tsuen Interchange**

As shown in **Table 5.9** of the EIA Report, the predicted 2021 peak hour traffic flow on SWC (including the section of DBL to the north of Ha Tsuen Interchange) are about 3800 vehicle per hour with 66% of goods vehicles for both northbound and southbound directions. Among the 66% of goods vehicles (GV), it was assumed in the EIA Report that 50% of the non-container truck portion of the goods vehicles would be light goods vehicle (LGV). The percentage of LGV among all the GV (including container truck) is about 22%.

The purpose of this sensitivity test is to determine the change in potential air quality impact for a lower percentage of LGV on SWC and the section of DBL to the north of Ha Tsuen Interchange. This sensitivity test assumed only 12% of all GV (including container truck) as LGV, and the other 88% of the GV would be heavy goods vehicles (HGV) and container trucks. In view of the higher tailpipe emissions from HGV and container truck compared with LGV, the lower percentage of LGV would in effect result in higher traffic emissions from SWC and the section of DBL to the north of Ha Tsuen Interchange.

The air sensitive receivers (ASRs) most susceptible to this change would be those ASRs in Ngau Hom Shek, namely assessment points 8101 to 8131. The predicted worst-case 1-hour and 24-hour average NO<sub>2</sub> concentration at these assessment points for the scenario with 22% LGV (the scenario presented in the EIA Report) and the 12% LGV scenario are shown in the following table. The concentration contours for the predicted worst-case 1-hour and 24-hour average NO<sub>2</sub> at 1.5m and 10m above ground level for the 12% LGV scenario are shown in **Figures A5D.1 to A5D.4**.

**Predicted Worst-case 1-hour and 24-hour Average NO<sub>2</sub> Concentration for the 12% and 22% LGV Scenarios**

Assessment Point	Height (m)	12% LGV Scenario (Scenario tested in this appendix)		22% LGV Scenario (Scenario presented in the EIA Report)	
		Worst-case 1-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 24-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 1-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 24-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )
8101	1.5	190.5	134.4	188.4	133.4
	10.0	188.5	133.5	188.1	132.6
8102	1.5	188.4	133.8	187.3	132.9
	10.0	187.5	132.9	187.1	132.1
8103	1.5	187.4	133.3	186.4	132.5
	10.0	186.6	132.5	186.1	131.6
8104	1.5	189.7	133.4	185.7	132.3
	10.0	185.7	132.3	185.3	131.4
8105	1.5	188.1	132.8	184.8	131.8
	10.0	184.9	131.8	184.4	130.9
8106	1.5	195.7	136.7	191.7	134.6
	10.0	191.2	134.2	189.5	132.2
8108	1.5	201.6	140.9	200.7	139.7
	10.0	199.2	139.0	194.7	136.7
8109	1.5	202.9	143.2	202.5	142.3
	10.0	202.3	142.0	201.8	140.7
8110	1.5	202.9	143.2	202.5	142.1
	10.0	203.8	143.6	203.3	142.7

Assessment Point	Height (m)	12% LGV Scenario (Scenario tested in this appendix)		22% LGV Scenario (Scenario presented in the EIA Report)	
		Worst-case 1-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 24-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 1-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )	Worst-case 24-hr Average NO <sub>2</sub> (µgm <sup>-3</sup> )
8116	1.5	252.9	132.6	245.4	130.9
	10.0	246.4	134.2	239.3	132.8
8117	1.5	249.3	132.9	242.2	131.4
	10.0	243.9	132.5	237.1	131.2
8118	1.5	168.1	127.2	166.5	126.4
	10.0	166.6	126.3	165.1	125.4
8119	1.5	176.1	126.9	174.8	126.1
	10.0	174.5	126.0	173.3	125.1
8120	1.5	171.9	125.8	170.7	124.6
	10.0	170.6	124.6	169.4	123.4
8121	1.5	166.3	125.7	164.9	124.4
	10.0	165.0	124.5	163.7	123.2
8122	1.5	159.1	126.4	156.4	125.1
	10.0	158.7	125.2	155.9	123.8
8123	1.5	162.8	124.6	161.5	123.3
	10.0	161.7	123.6	160.4	121.9
8124	1.5	156.8	124.7	155.3	123.2
	10.0	155.8	123.5	154.4	121.8
8125	1.5	156.2	126.0	154.1	124.5
	10.0	155.3	124.5	153.1	122.9
8126	1.5	155.8	124.1	154.4	122.5
	10.0	154.9	122.9	153.5	121.2
8127	1.5	161.5	123.3	160.2	121.7
	10.0	160.5	122.1	159.2	120.6
8128	1.5	164.9	122.6	164.6	121.8
	10.0	164.0	122.0	163.7	121.2
8129	1.5	163.6	122.9	162.4	121.4
	10.0	162.5	121.9	161.4	120.5
8130	1.5	158.1	122.6	156.8	121.1
	10.0	157.2	121.5	155.9	120.1
8131	1.5	168.3	122.4	167.3	121.1
	10.0	167.3	121.3	166.3	120.6
<b>Highest</b>		<b>252.9</b>	<b>143.6</b>	<b>245.4</b>	<b>142.7</b>
<b>AQO</b>		<b>300</b>	<b>150</b>	<b>300</b>	<b>150</b>
<b>% of AQO</b>		<b>84%</b>	<b>96%</b>	<b>82%</b>	<b>95%</b>

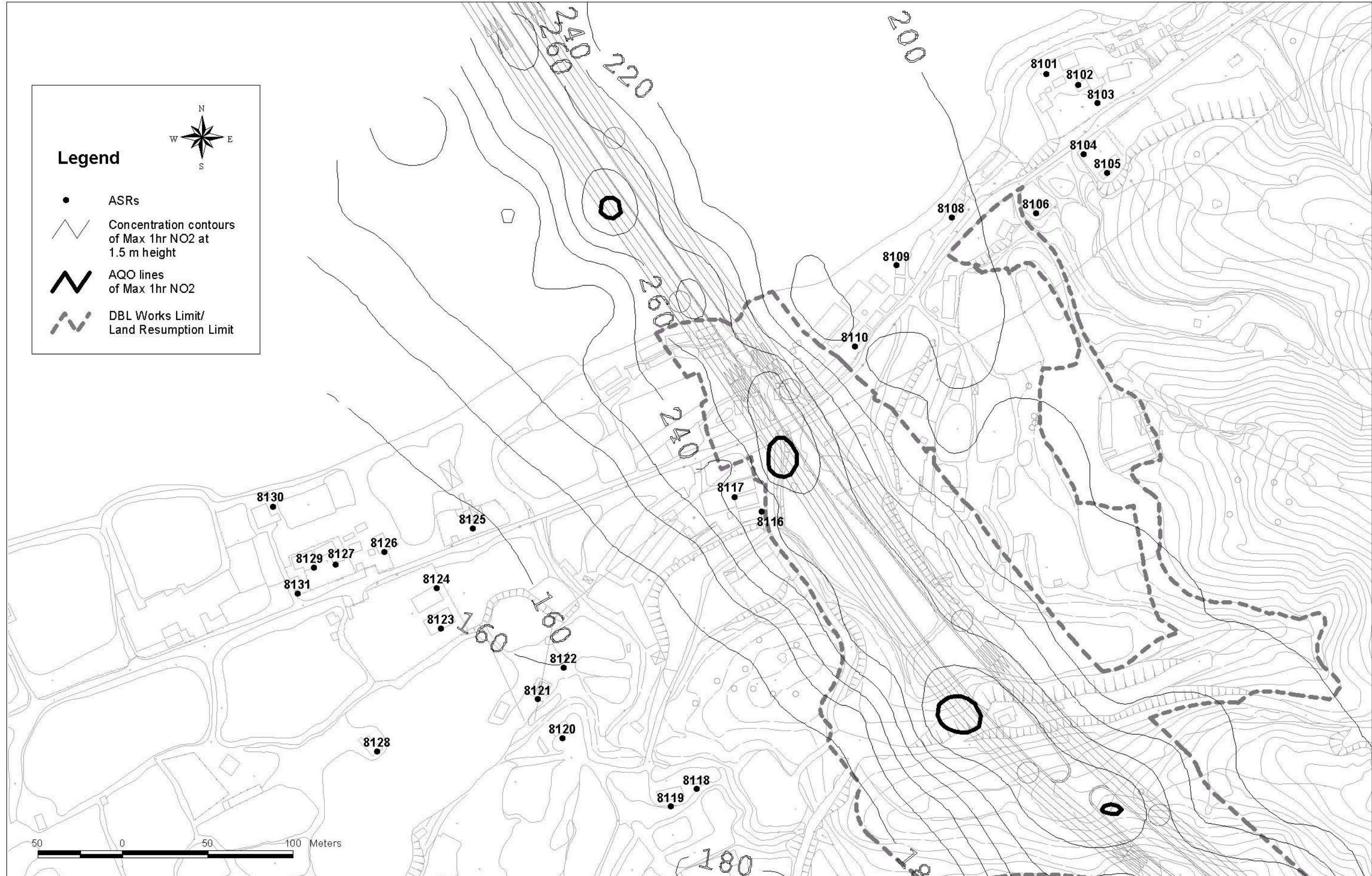
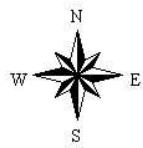
As shown by the above modeling results, the worst-case 1-hour average NO<sub>2</sub> level at the ASRs in Ngau Hom Shek would increase from 245.4 µgm<sup>-3</sup> (82% of AQO) to 252.9 µgm<sup>-3</sup> (84% of AQO) with a decrease of LGV% from 22% to 12%. The worst-case 24-hour average NO<sub>2</sub> level at the ASRs in Ngau Hom Shek would increase from 142.7 µgm<sup>-3</sup> (95% of AQO) to 143.6 µgm<sup>-3</sup> (96% of AQO) with a decrease of LGV% from 22% to 12%. No exceedance of the respective AQO for NO<sub>2</sub> at the ASRs in Ngau Hom Shek is expected with a decrease of LGV% from 22% to 12%. As shown in Figures A5D.2 and A5D.3, there are two tiny areas just outside the works limit/land resumption limit with predicted exceedance of the 1-hour average or 24-hour average AQO for NO<sub>2</sub>. No existing ASR or planned air sensitive use is identified at

these two areas. Exceedance of the respective AQO for NO<sub>2</sub> at the ASRs in Ngau Hom Shek is not expected with a decrease of LGV% from 22% to 12%.

With reference to the results of the sensitivity test above for NO<sub>2</sub>, the decrease of LGV% from 22% to 12% would only increase the predicted pollutant levels at ASRs by a few percents. For the other traffic air pollutants namely RSP, CO, and SO<sub>2</sub>, the modeling results at those ASRs in Ngau Hom Shek, namely assessment points 8101 to 8131, under the 22% LGV scenario are all less than 60% of their respective AQO (see **Table 5.17**). Exceedance of the AQO at the ASRs in Ngau Hom Shek for the other traffic air pollutants is thus not expected with a decrease of LGV% from 22% to 12%.

**Legend**

- ASRs
- ~ Concentration contours of Max 1hr NO2 at 1.5 m height
- ~ AQO lines of Max 1hr NO2
- - - DBL Works Limit/ Land Resumption Limit



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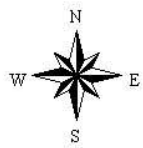
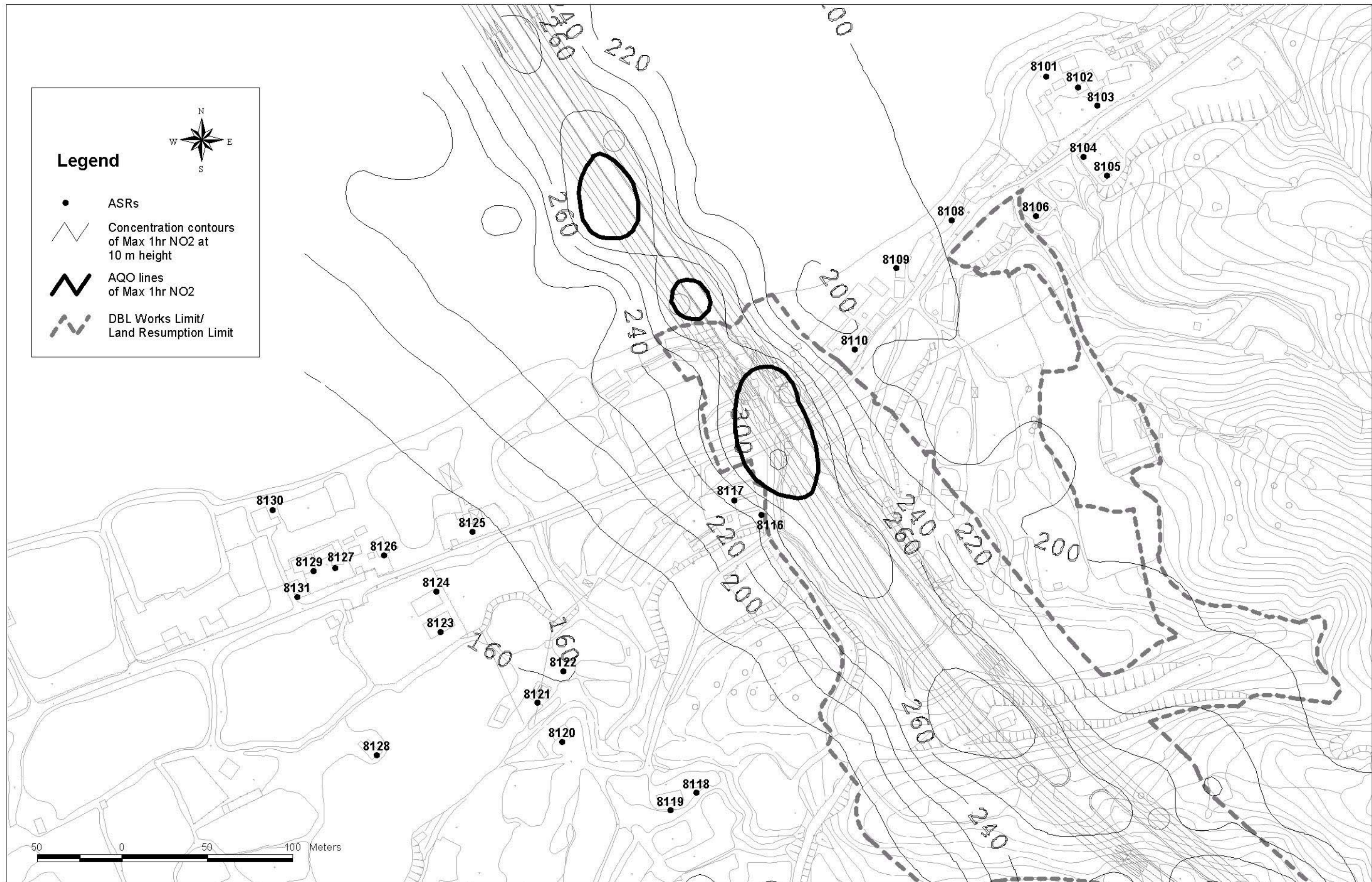
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**Shenzhen Western Corridor Investigation & Planning**

Drawing Title  
**Predicted Worst-case 1-hour Average Nitrogen Dioxide Concentration Contours at 1.5m above Ground**

Scale	1: 2000@A3
Drawing No.	<b>Figure A5D.1</b>
Drawing Status	PRELIMINARY
Rev.	1

**Legend**

- ASRs
- ~ Concentration contours of Max 1hr NO2 at 10 m height
- ~ AQO lines of Max 1hr NO2
- - - DBL Works Limit/ Land Resumption Limit

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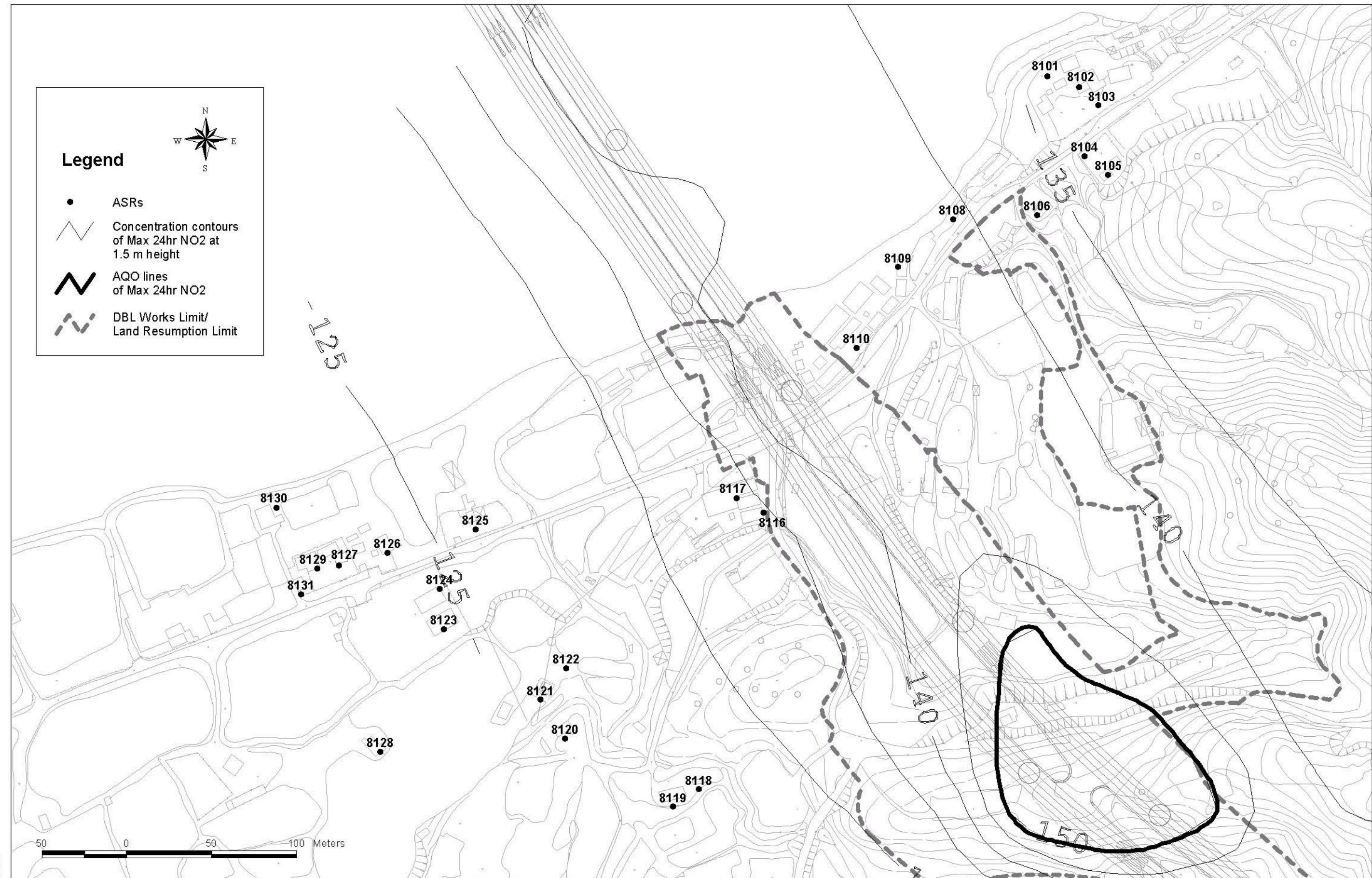
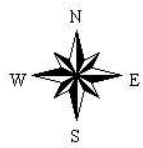
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Drawing Title  
**Predicted Worst-case 1-hour  
 Average Nitrogen Dioxide  
 Concentration Contours  
 at 10m above Ground**

Scale	1: 2000@A3
Drawing No.	<b>Figure ASD.2</b>
Drawing Status	PRELIMINARY
Rev.	1

**Legend**

- ASRs
- ~ Concentration contours of Max 24hr NO<sub>2</sub> at 1.5 m height
- AQO lines of Max 24hr NO<sub>2</sub>
- - - DBL Works Limit/ Land Resumption Limit



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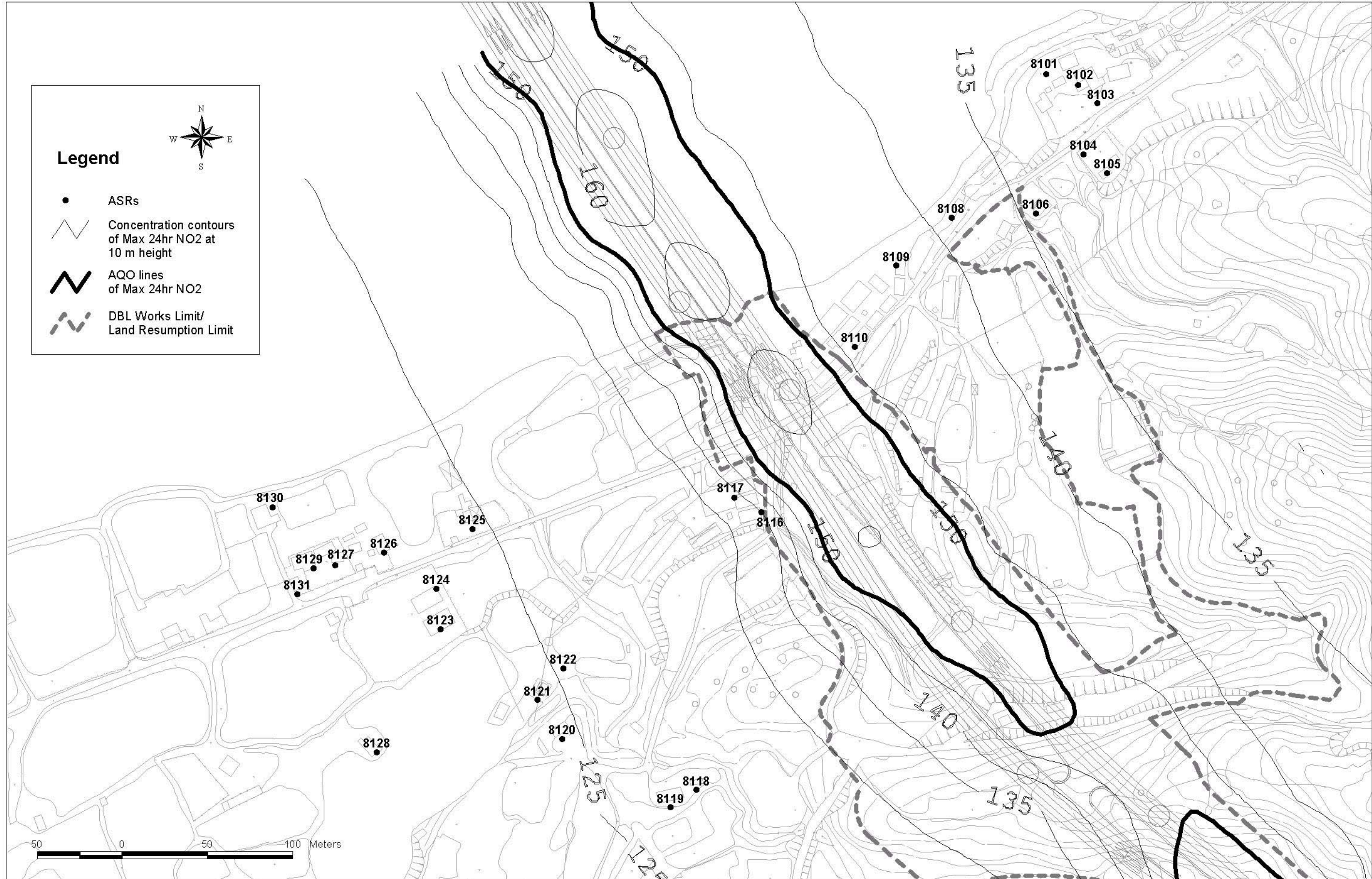
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Drawing Title:  
**Predicted Worst-case 24-hour  
 Average Nitrogen Dioxide  
 Concentration Contours  
 at 1.5m above Ground**

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**Figure ASD.3**  
 Drawing Status: PRELIMINARY  
 Rev: 1

**Legend**

- ASRs
- ~ Concentration contours of Max 24hr NO<sub>2</sub> at 10 m height
- AQO lines of Max 24hr NO<sub>2</sub>
- - - DBL Works Limit/ Land Resumption Limit



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Drawing Title:  
**Predicted Worst-case 24-hour  
 Average Nitrogen Dioxide  
 Concentration Contours  
 at 10m above Ground**

Scale:  
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 Drawing No.:  
**Figure ASD.4**  
 Drawing Status:  
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 Rev.:  
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