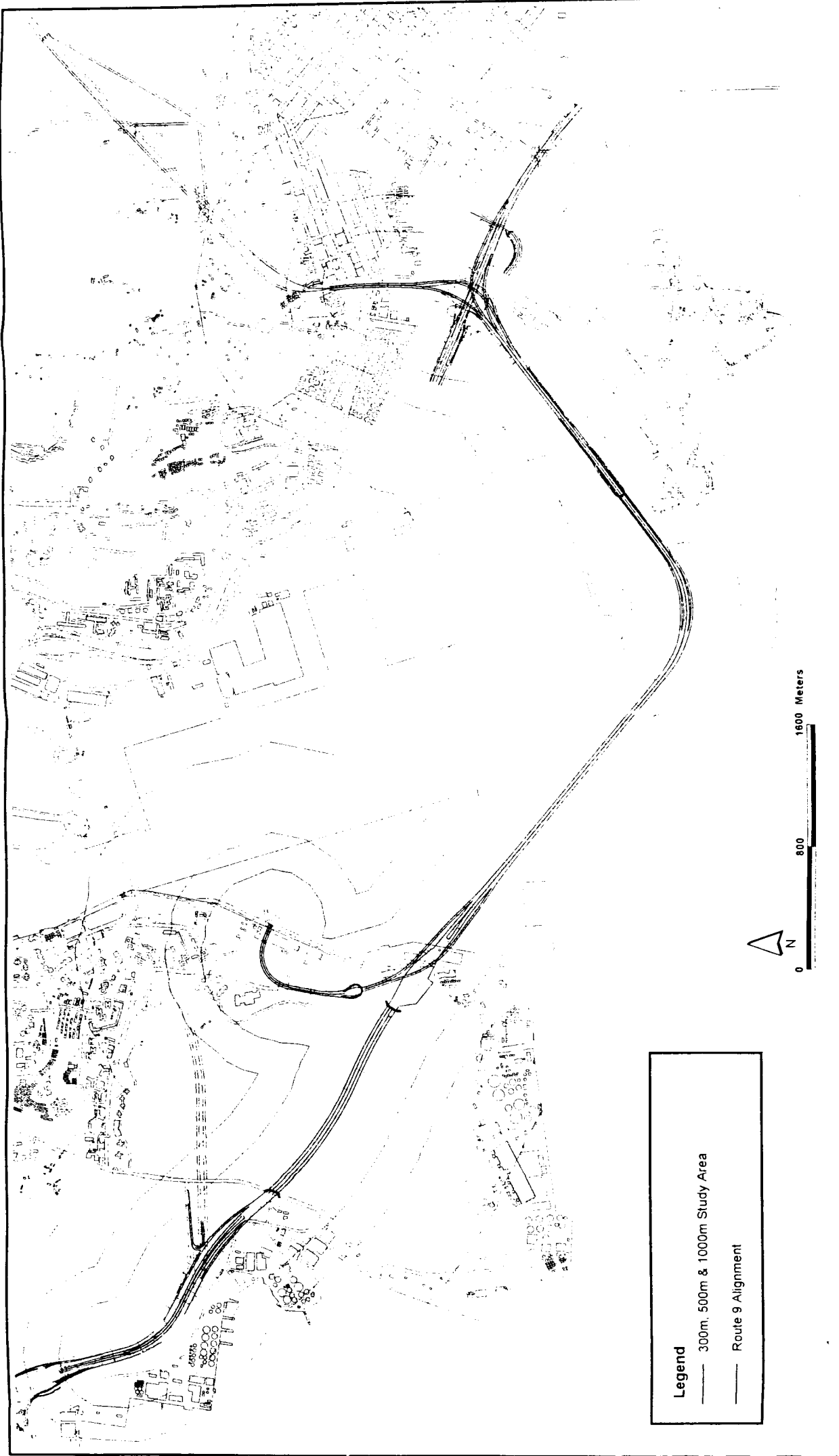




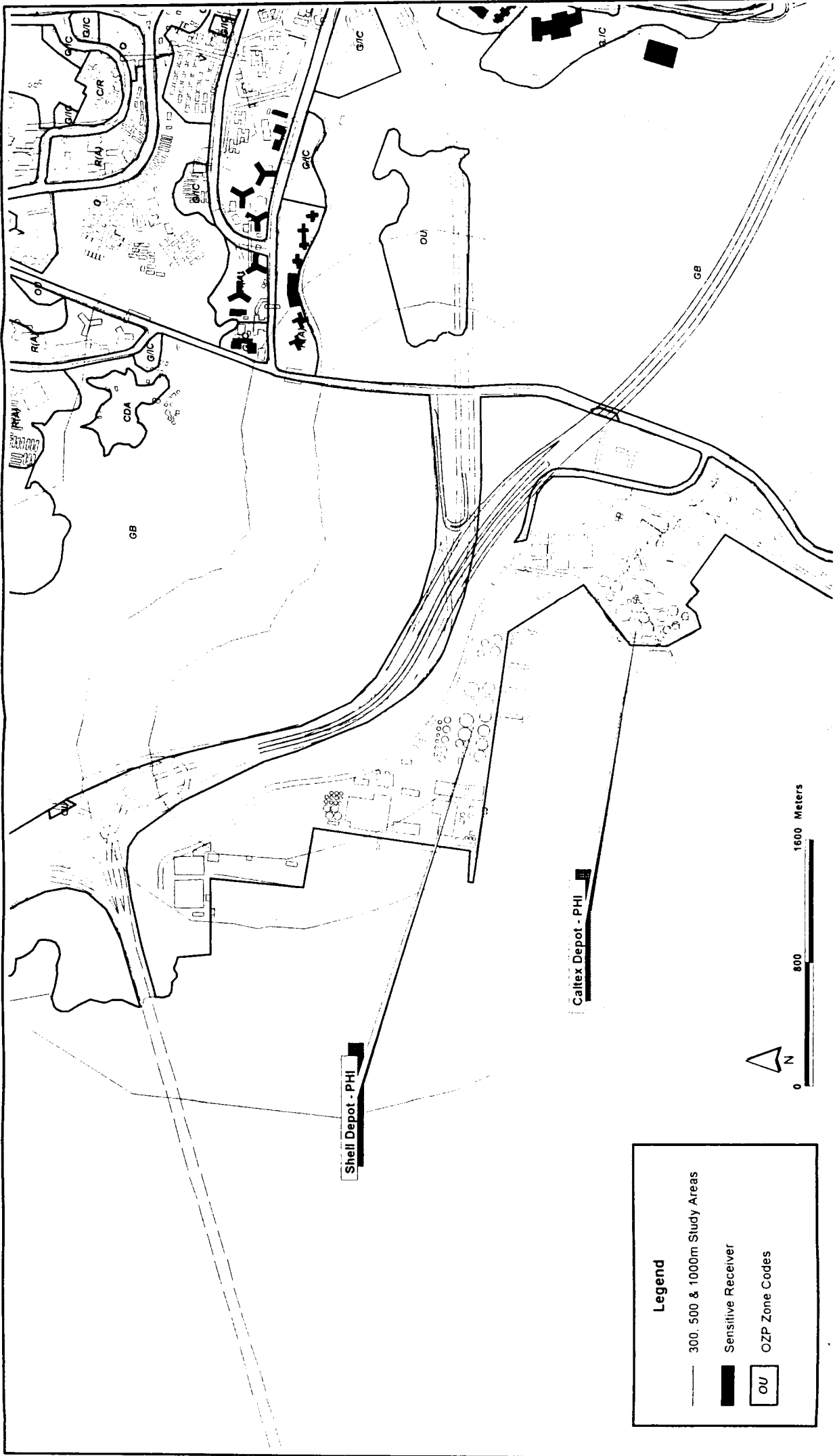
## **FIGURES**



**Legend**

- 300m, 500m & 1000m Study Area
- Route 9 Alignment

 <b>Highways Department</b>	<b>Route 9</b> <b>Between Tsing Yi and Cheung Sha Wan</b> <b>Detailed Feasibility Study</b>		<b>安建顧問公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small> 		<b>Title</b> Study Area
			<b>Scale</b> 1:20000	<b>Date</b> April 99	<b>Figure No.</b> 1.1



**Legend**

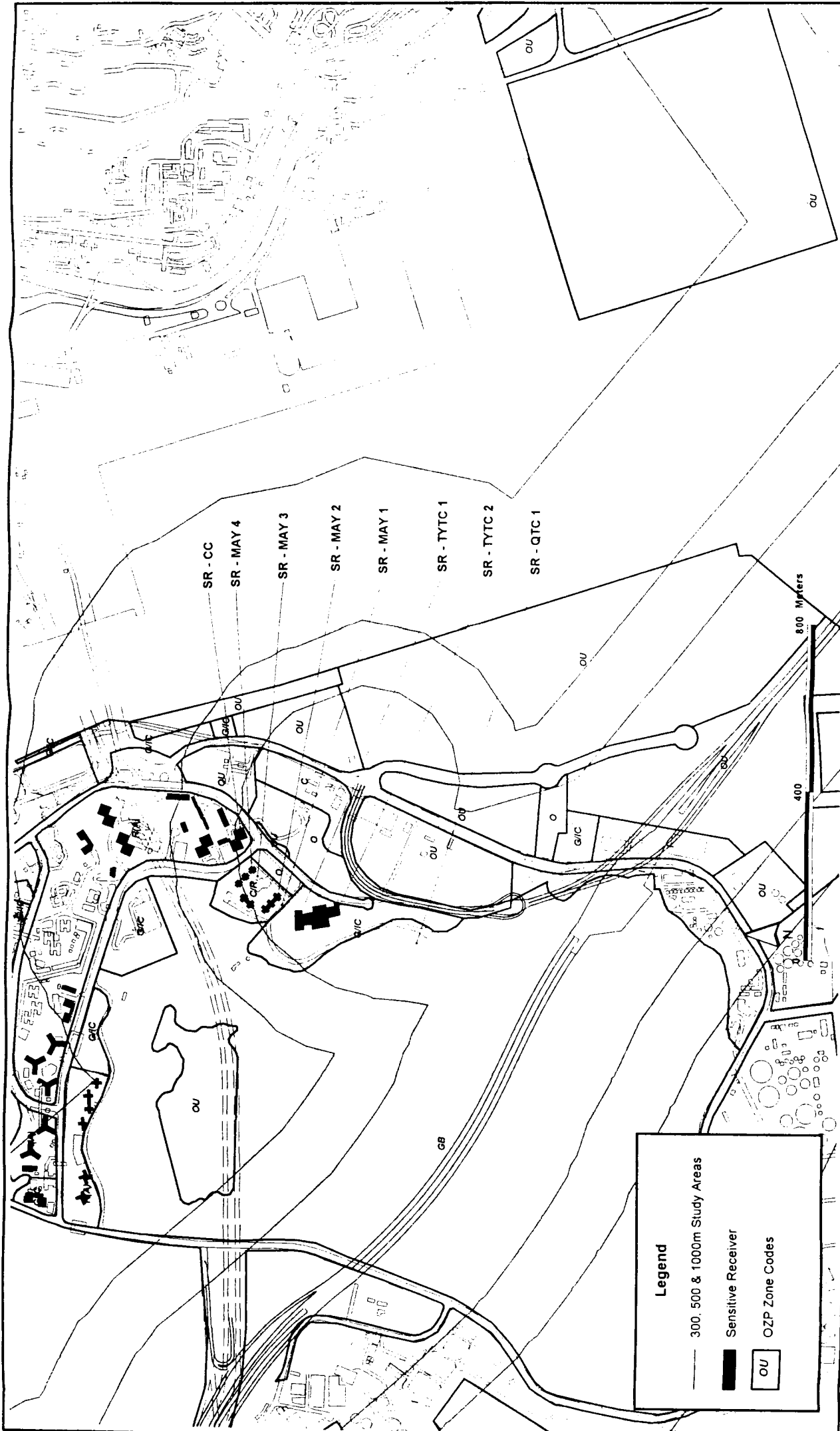
- 300, 500 & 1000m Study Areas
- Sensitive Receiver
- OZP Zone Codes

**Highways Department**

**Route 9  
Between Tsing Yi and Cheung Sha Wan  
Detailed Feasibility Study**

**安建顧問公司  
Atkins China Ltd**  
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<b>Title</b>	Western Portal of Nam Wan Tunnel Leading to North West Tsing Yi Interchange	
<b>Scale</b>		
<b>Date</b>	April 99	<b>Figure No.</b> 1.2



**Legend**

- 300, 500 & 1000m Study Areas
- Sensitive Receiver
- OU OZP Zone Codes

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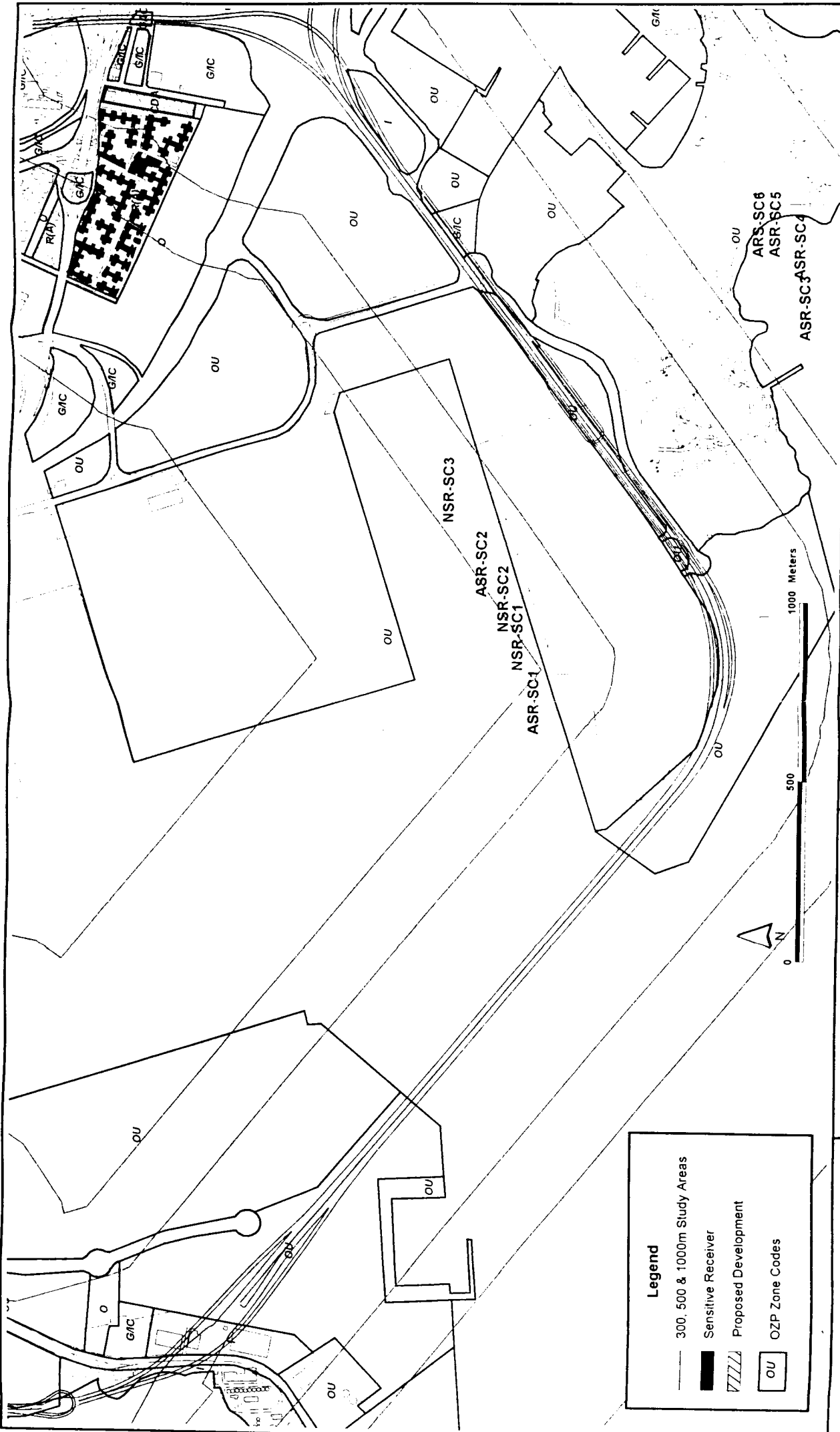
Route 9  
 Between Tsing Yi and Cheung Sha Wan  
 Detailed Feasibility Study

Highways Department

Title Eastern Portal of Nam Wan Tunnel  
 and CT9 Slip Roads

Scale  
 Date April 99  
 Figure No. 1.3





**Legend**

- 300, 500 & 1000m Study Areas
- Sensitive Receiver
- ▨ Proposed Development
- OU



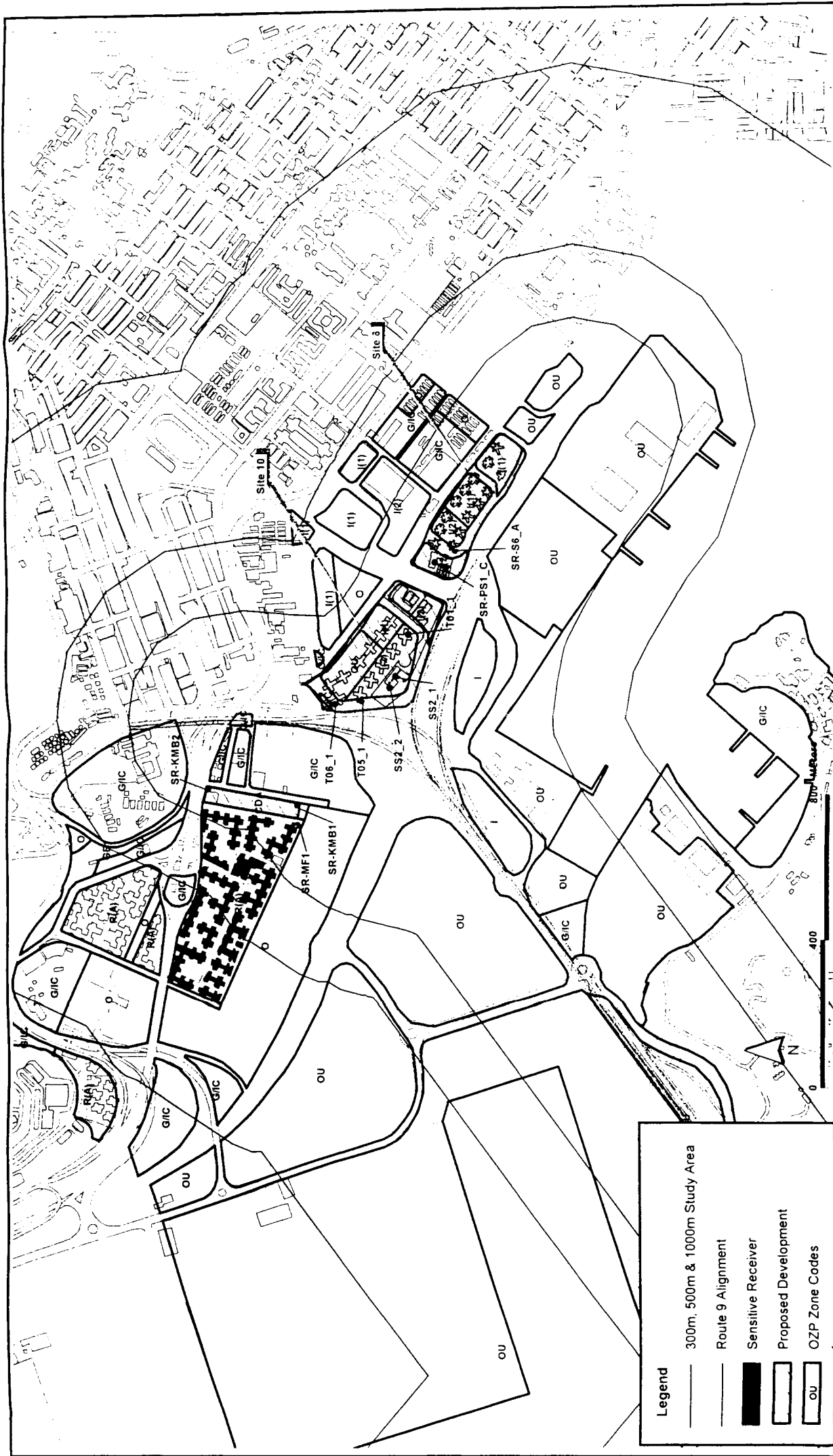
**Highways Department**

**Route 9  
Between Tsing Yi and Cheung Sha Wan  
Detailed Feasibility Study**

**安建顧問公司  
Atkins China Ltd**  
a member of the WS Atkins group of companies

**Title** Ngong Shuen Chau Viaduct and Stonecutter Base  
**Scale** 1:10000  
**Date** April 99

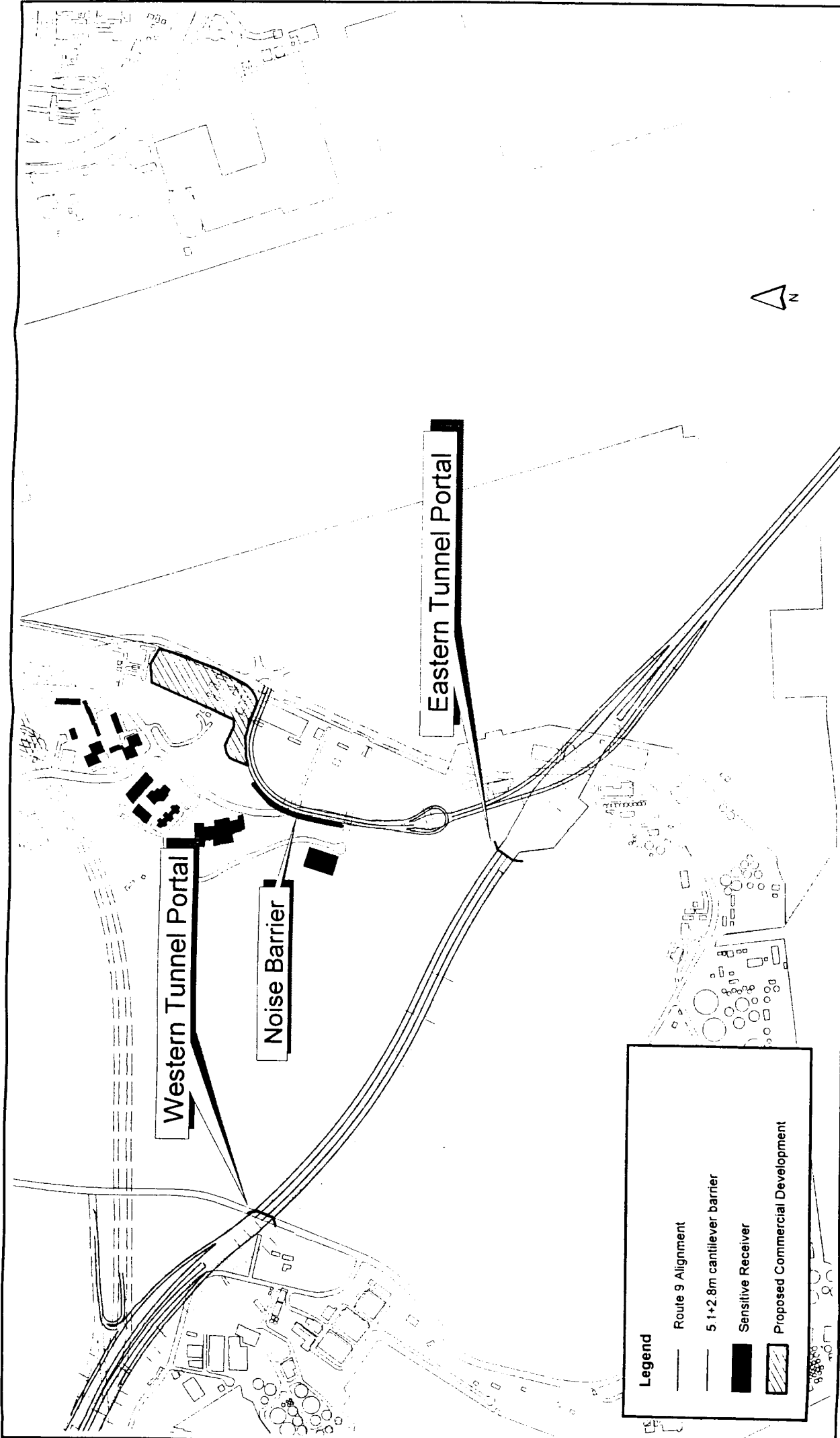
**Figure No.** 1.4



**Legend**

- 300m, 500m & 1000m Study Area
- Route 9 Alignment
- Sensitive Receiver
- Proposed Development
- OZP Zone Codes

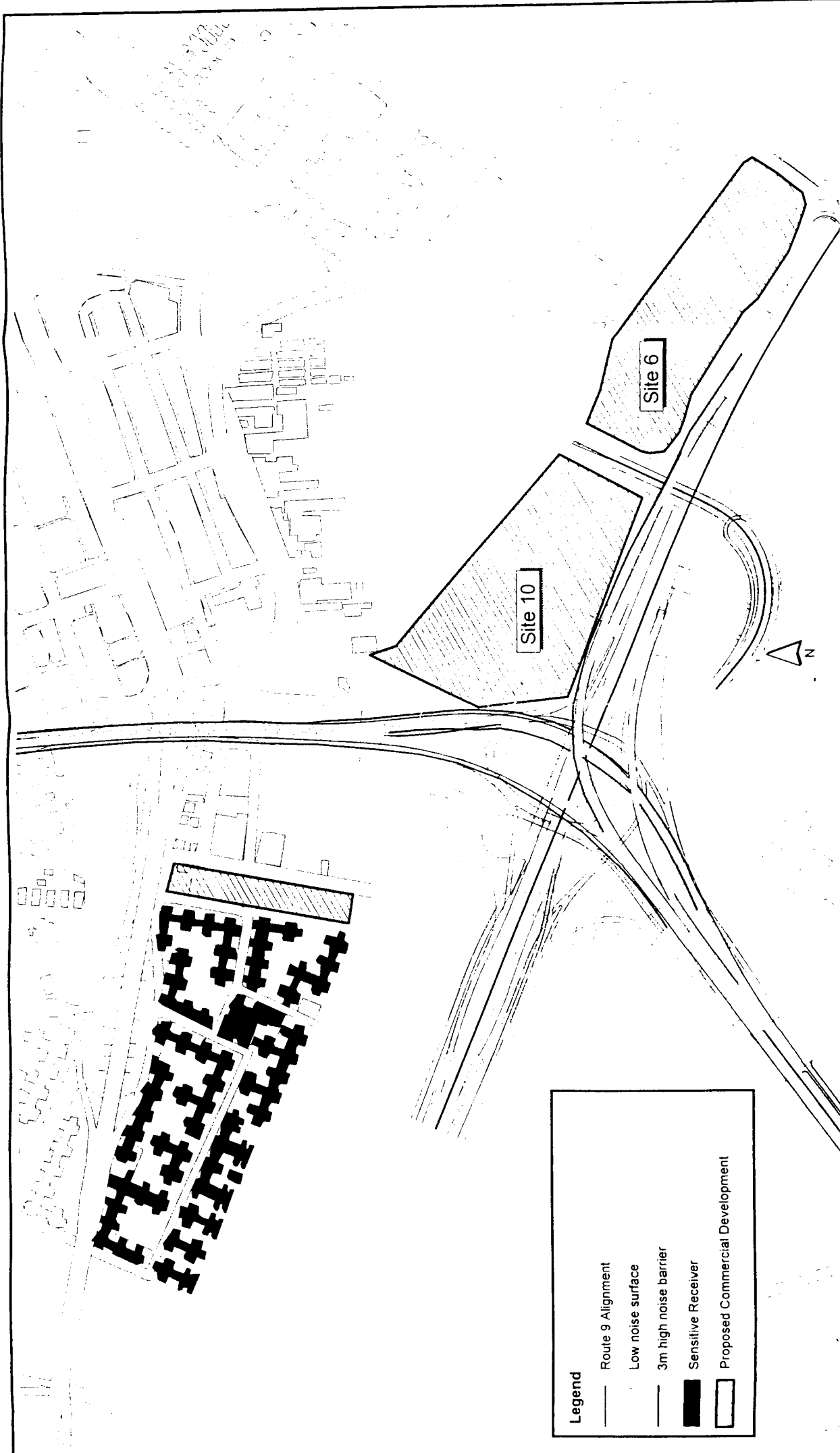
	<b>Highways Department</b>	<b>Route 9 Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study</b>	<b>安建顧問公司 Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small>	<b>Mei Foo Sun Chuen and Development in Kowloon Reclamation</b>
		<b>Title</b>	<b>Scale</b> 1:10000	<b>Date</b> Apr 99



**Legend**

- Route 9 Alignment
- 5 1+2.8m cantilever barrier
- Sensitive Receiver
- ▨ Proposed Commercial Development

 <b>Highways Department</b>	<b>Route 9</b> Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study		<b>安建顧問公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small>		Title Location of proposed noise barrier CT9 Slip Road
			Scale 1:10000	Date Apr 99	Figure No. 2.1

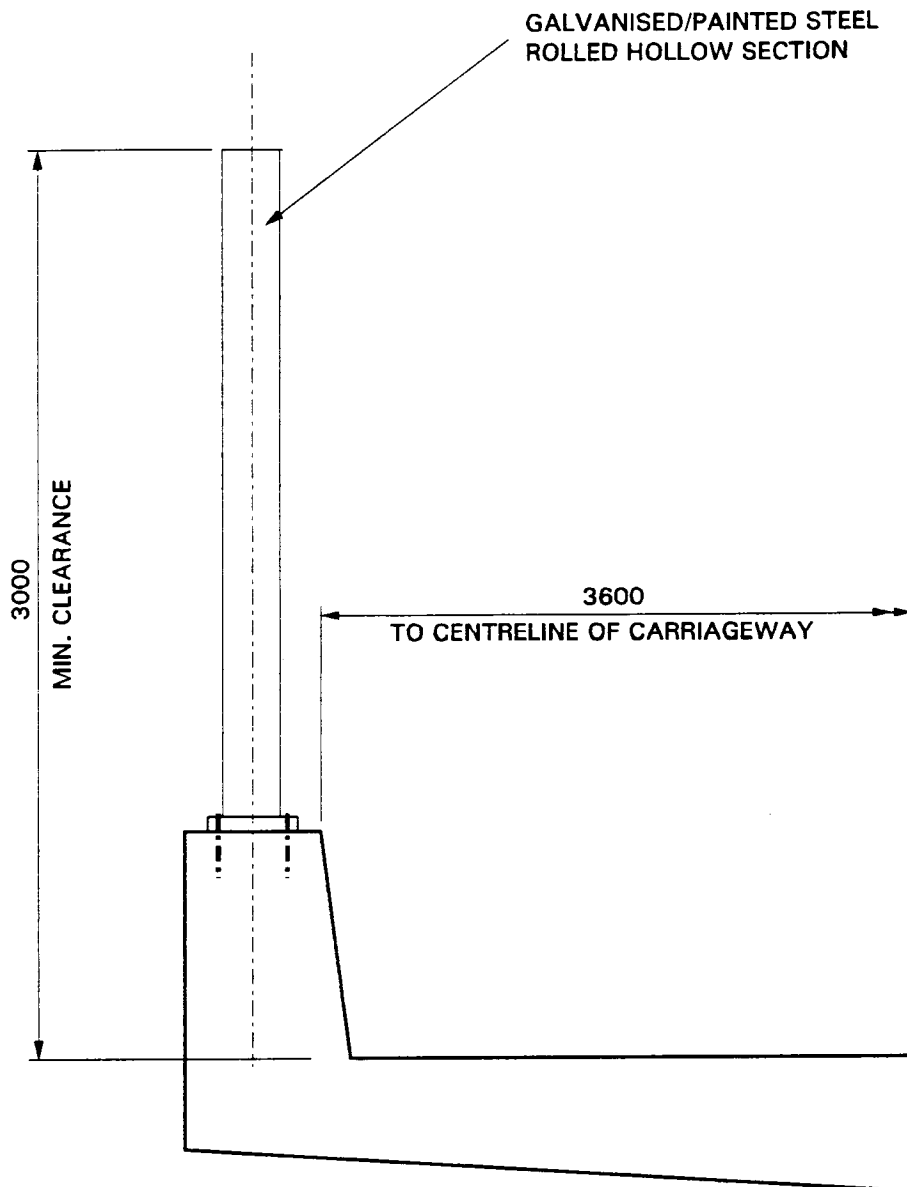


**Legend**

- Route 9 Alignment
- Low noise surface
- 3m high noise barrier
- Sensitive Receiver
- ▤ Proposed Commercial Development

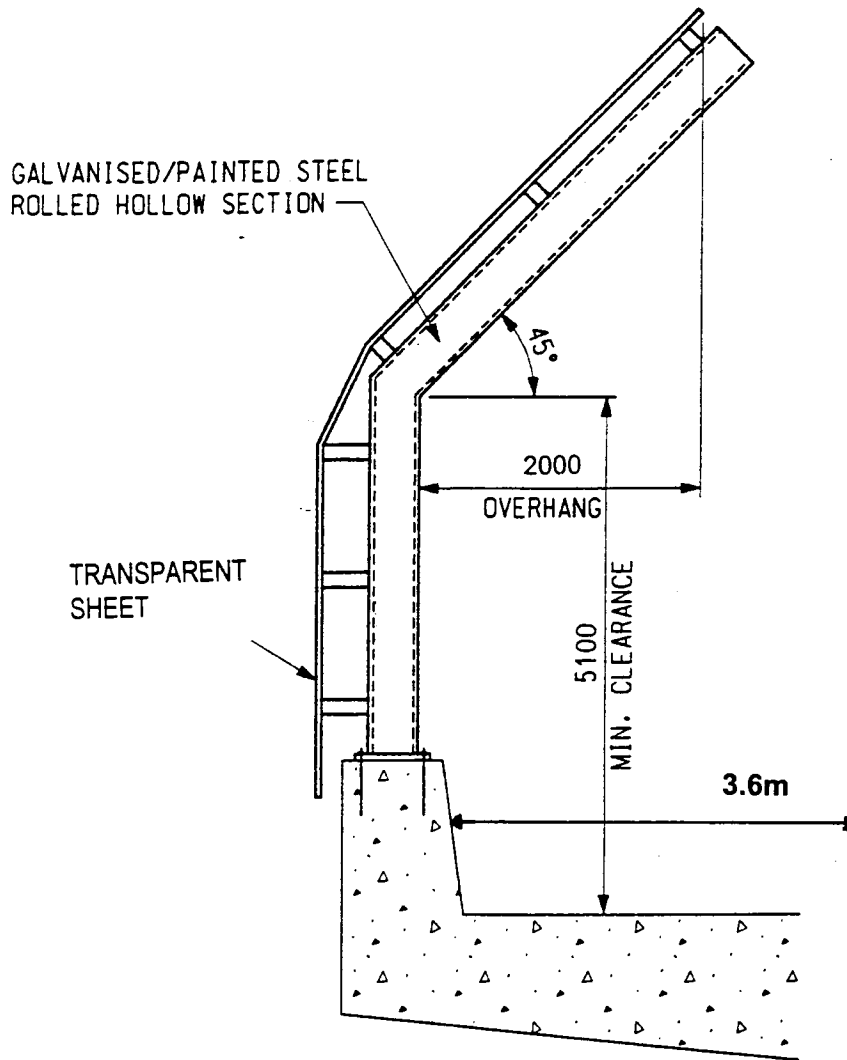
 <b>Highways Department</b>	<b>Route 9</b> Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study		<b>安建顧問公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small> 		Title <b>Recommended Noise Mitigation Measure</b> Lai Wan Interchange
	Scale 1:5000	Date Apr 99	Figure No 2.2		





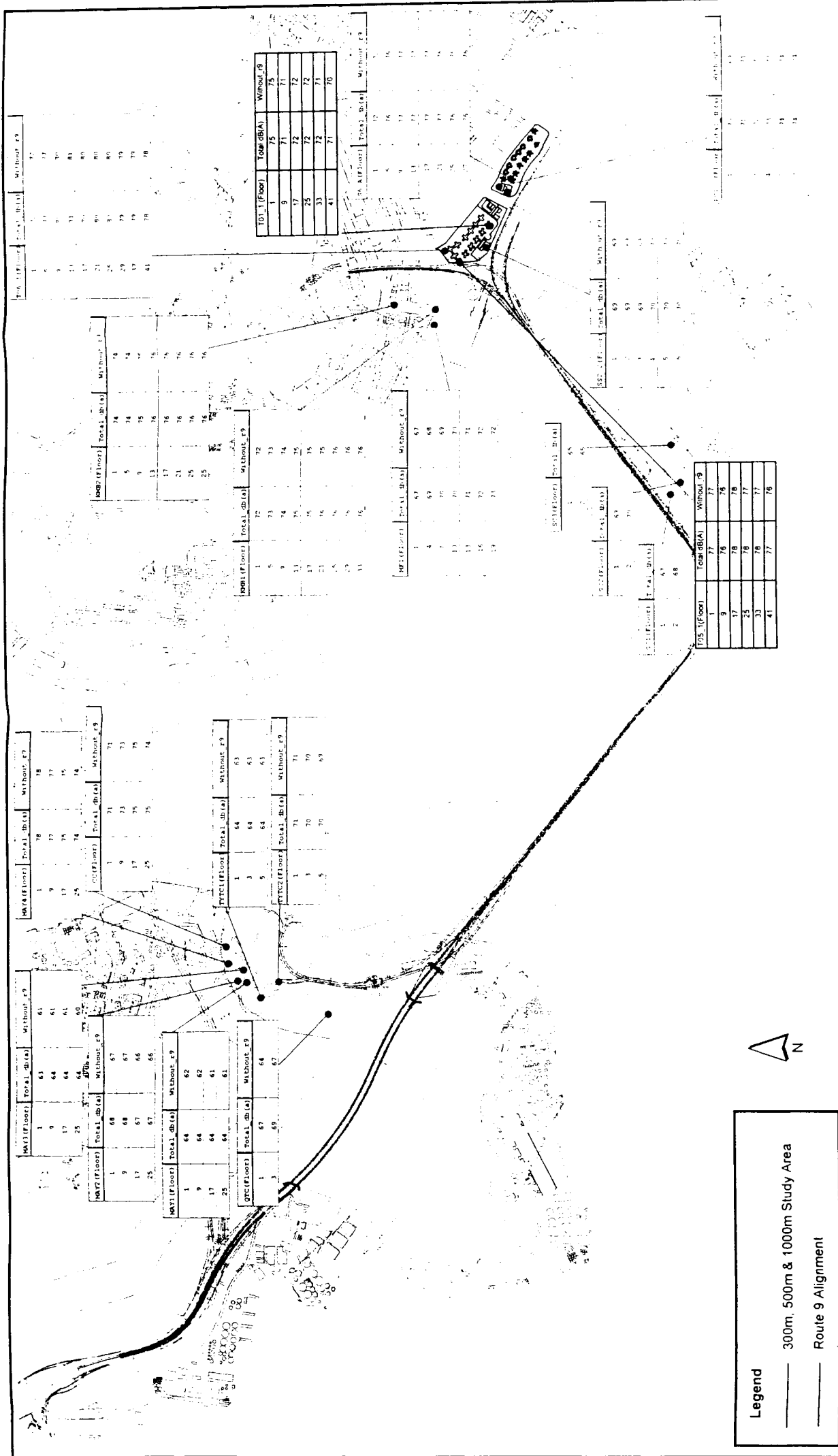
**TYPICAL 3m HIGH NOISE BARRIER**

SCALE 1:25




5m HIGH BARRIER  
(with 2.8m cantilever)

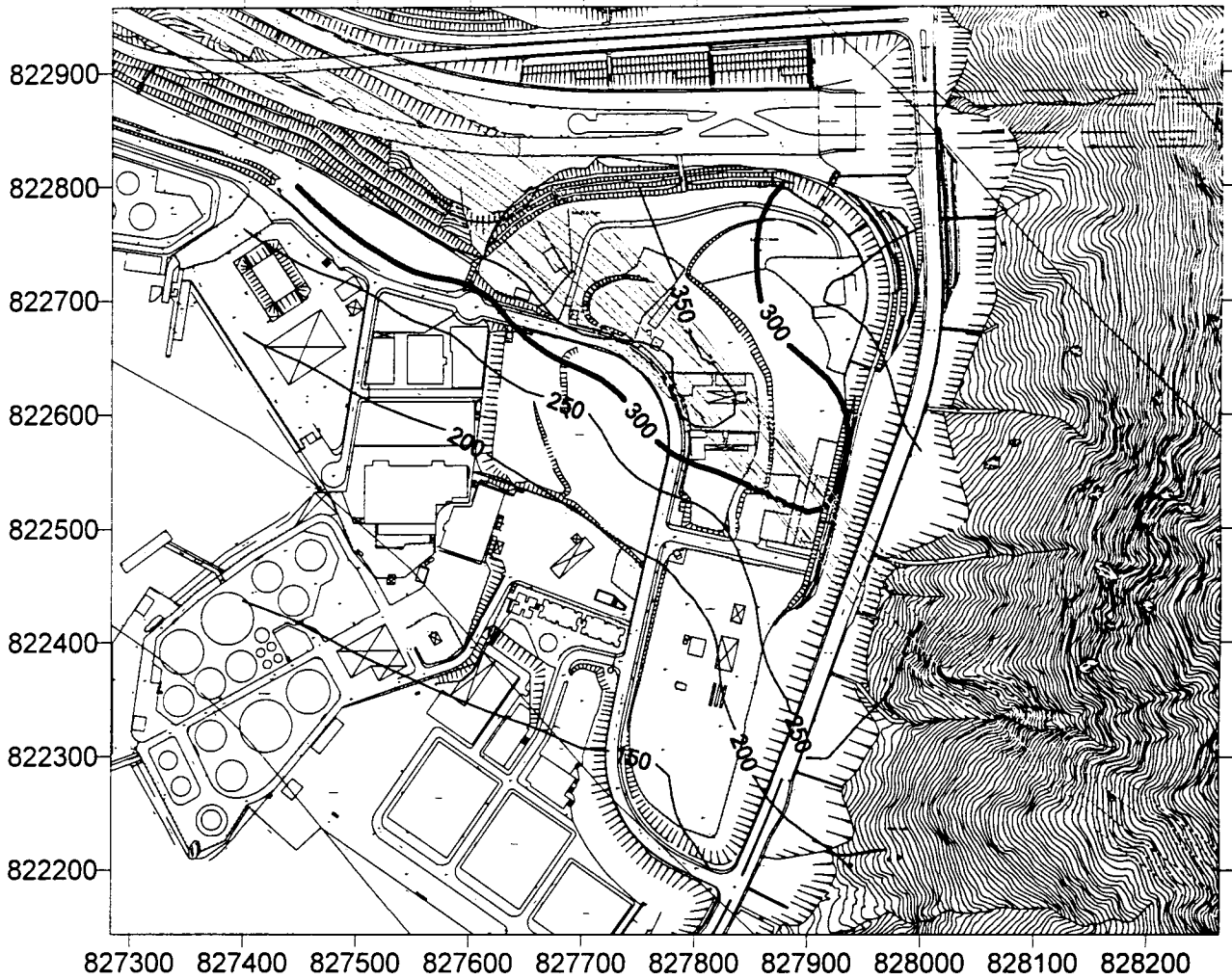
TYPICAL NOISE BARRIER DETAIL -



**Legend**

- 300m, 500m & 1000m Study Area
- Route 9 Alignment

	<b>Route 9</b> Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study	<b>安建顧問公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small>	<b>Mitigated Traffic Noise Levels</b>
	<b>Highways Department</b>	<b>Scale</b> 1:20000	<b>Title</b>
<b>Date</b> Apr 99		<b>Figure No</b> 2.4	



<b>Title</b> Maximum Hourly NO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) at Nam Wan Tunnel Western Portal Traffic Emission plus Background Level, 10 m below viaduct	<b>Scale</b> N/A	<b>Date</b> 26 April 1999	<b>Figure No.</b> 3.1
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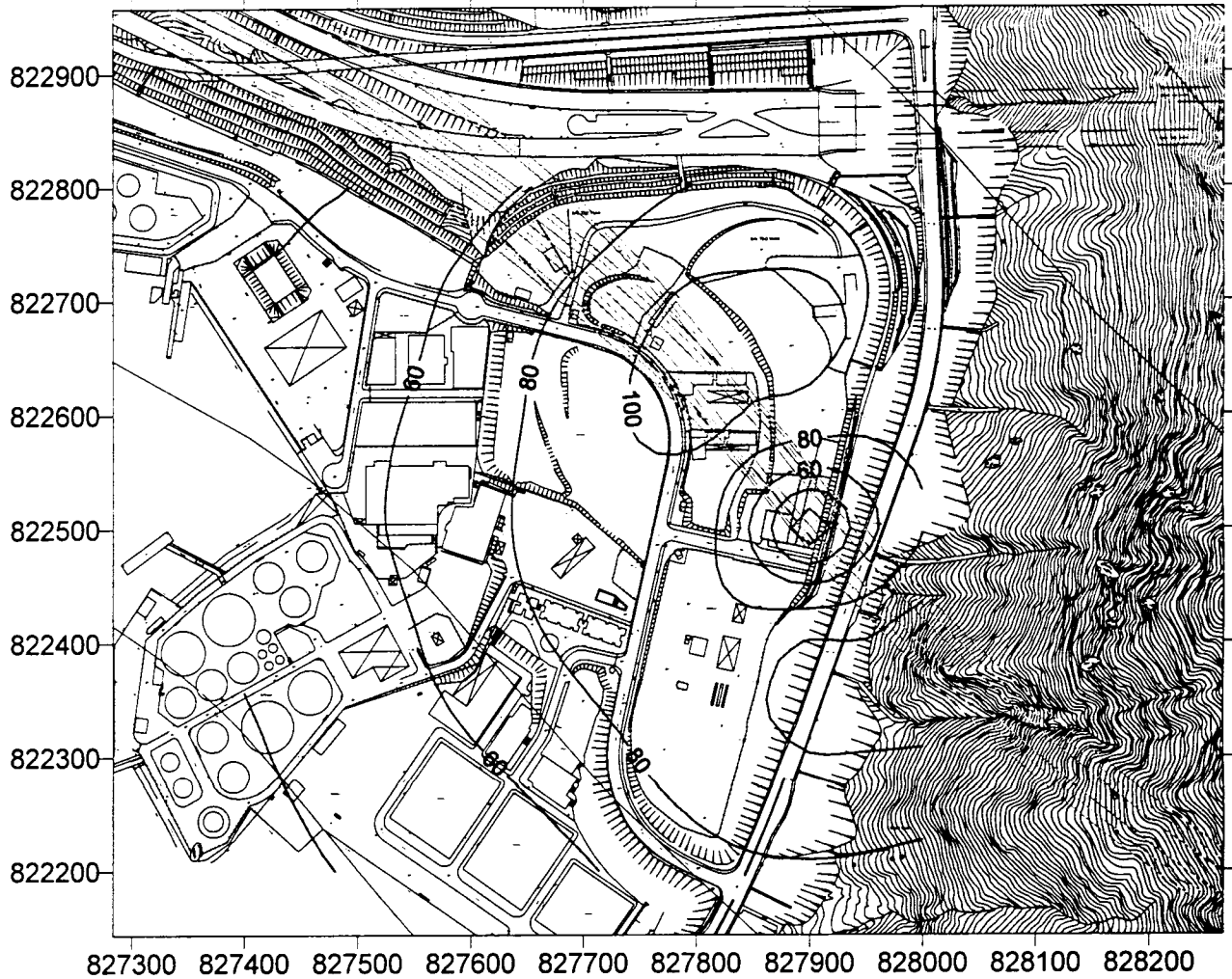
**Highways  
Department**

**Route 9  
Between Tsing Yi and Cheung Sha Wan  
Detailed Feasibility Study**

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<b>Title</b> Maximum Hourly NO2 Concentration (ug/m3) at Nam Wan Tunnel Western Portal Portal Emission Only, 18m above ground	<b>Scale</b> N/A	<b>Date</b> 26 April 1999	<b>Figure No.</b> 3.2
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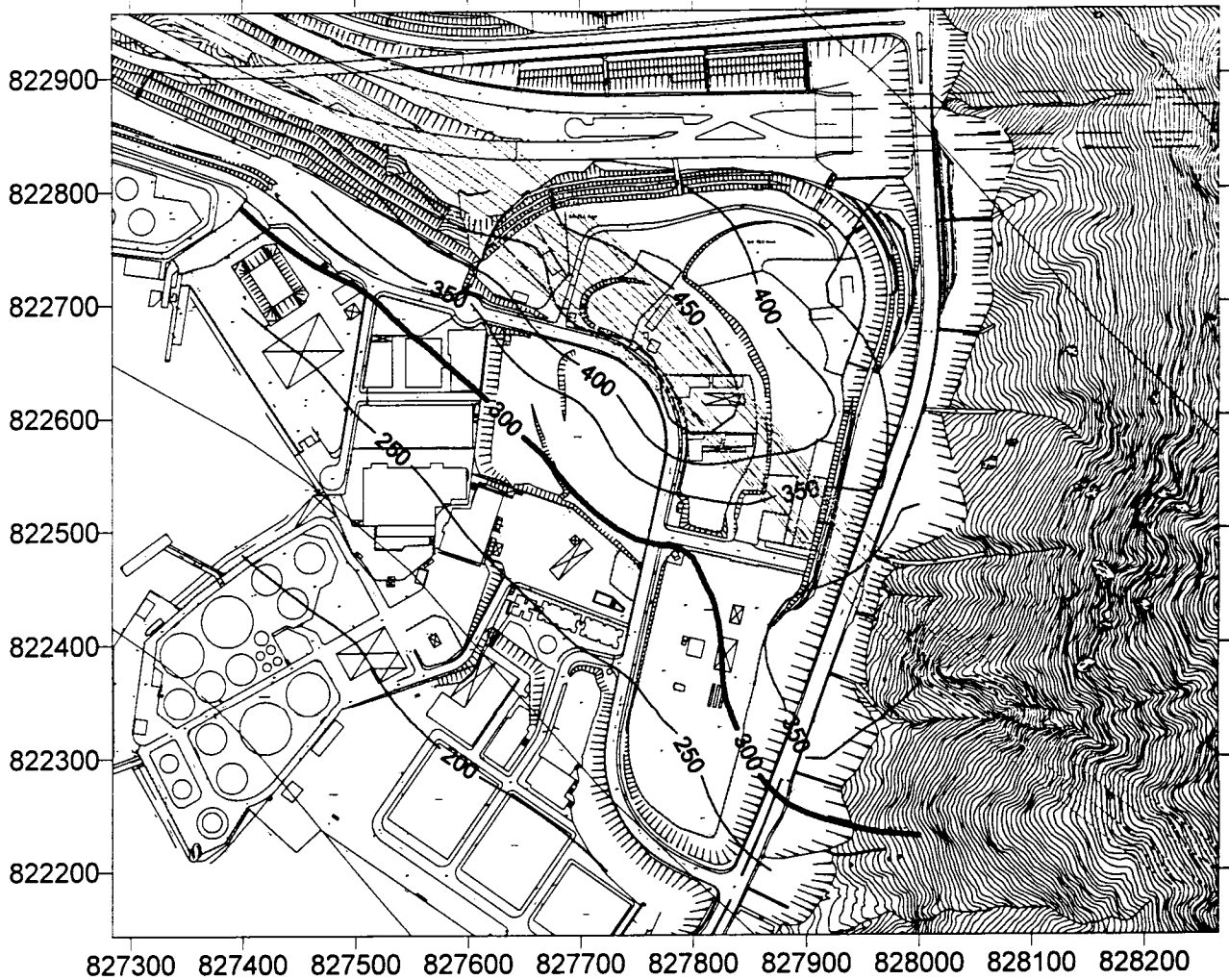
Highways  
Department

Route 9  
Between Tsing Yi and Cheung Sha Wan  
Detailed Feasibility Study

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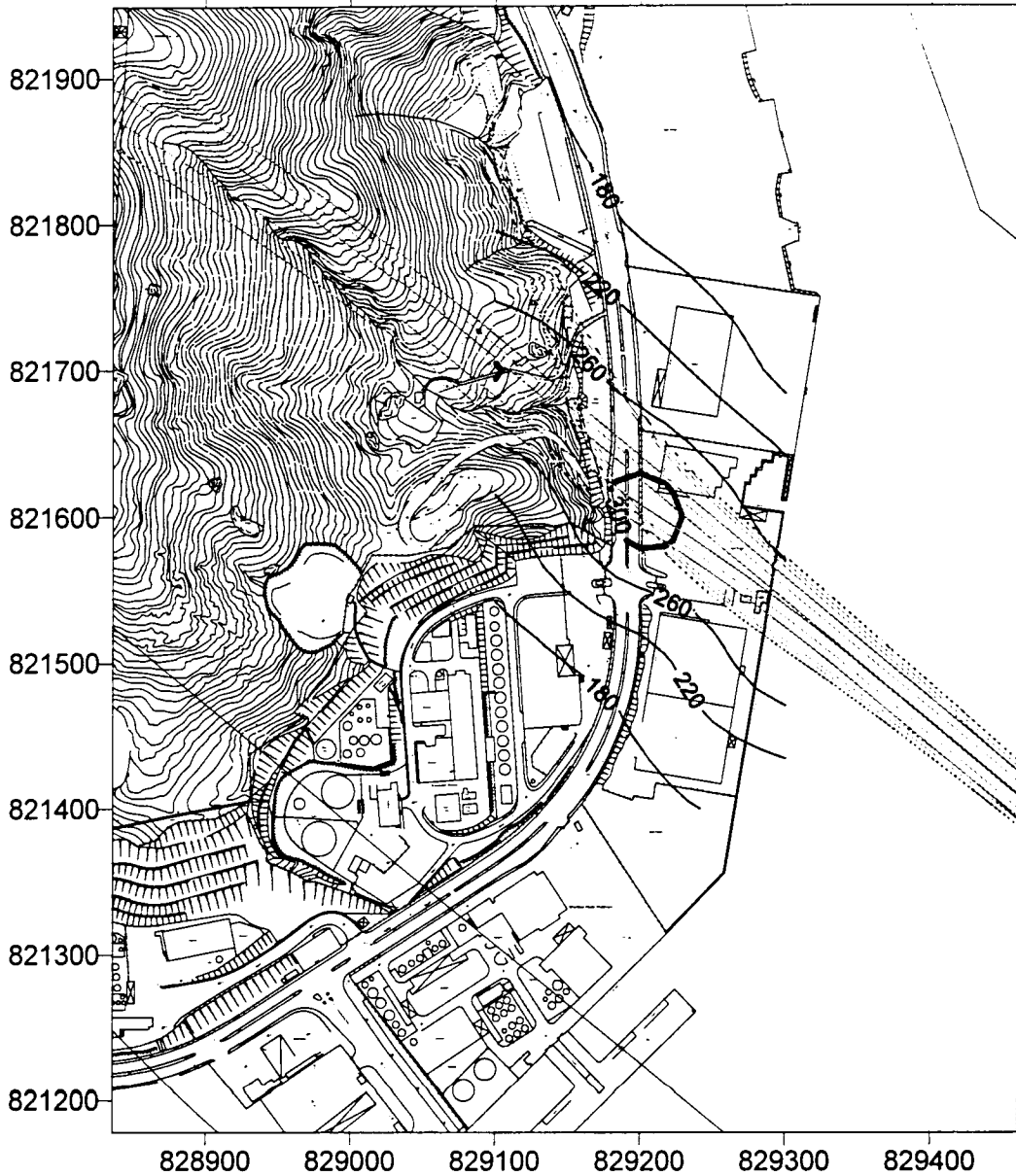


<b>Title</b> Maximum Hourly NO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) at Nam Wan Tunnel Western Portal Portal plus Traffic Emissions including Background Level	<b>Scale</b>  N/A	<b>Date</b>  26 April 1999	<b>Figure No.</b>  3.3
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**Route 9**  
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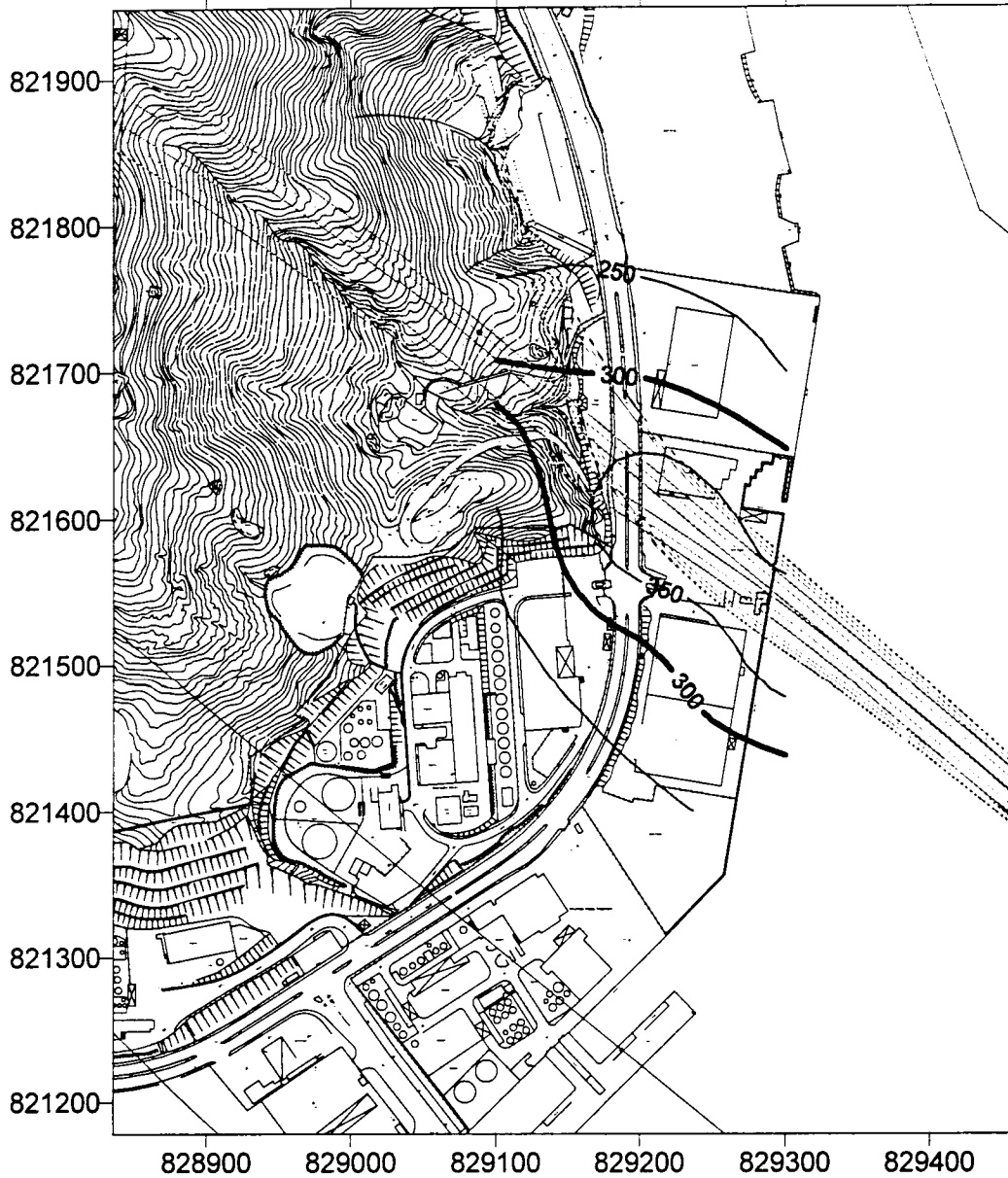


<b>Title</b> Maximum Hourly NO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) at Nam Wan Tunnel Eastern Portal Traffic Emission plus Background Level, 10 m below viaduct	<b>Scale</b> N/A	<b>Date</b> 26 April 1999	<b>Figure No.</b> 3.4
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**Route 9**  
**Between Tsing Yi and Cheung Sha Wan**  
**Detailed Feasibility Study**

安建顧問公司  
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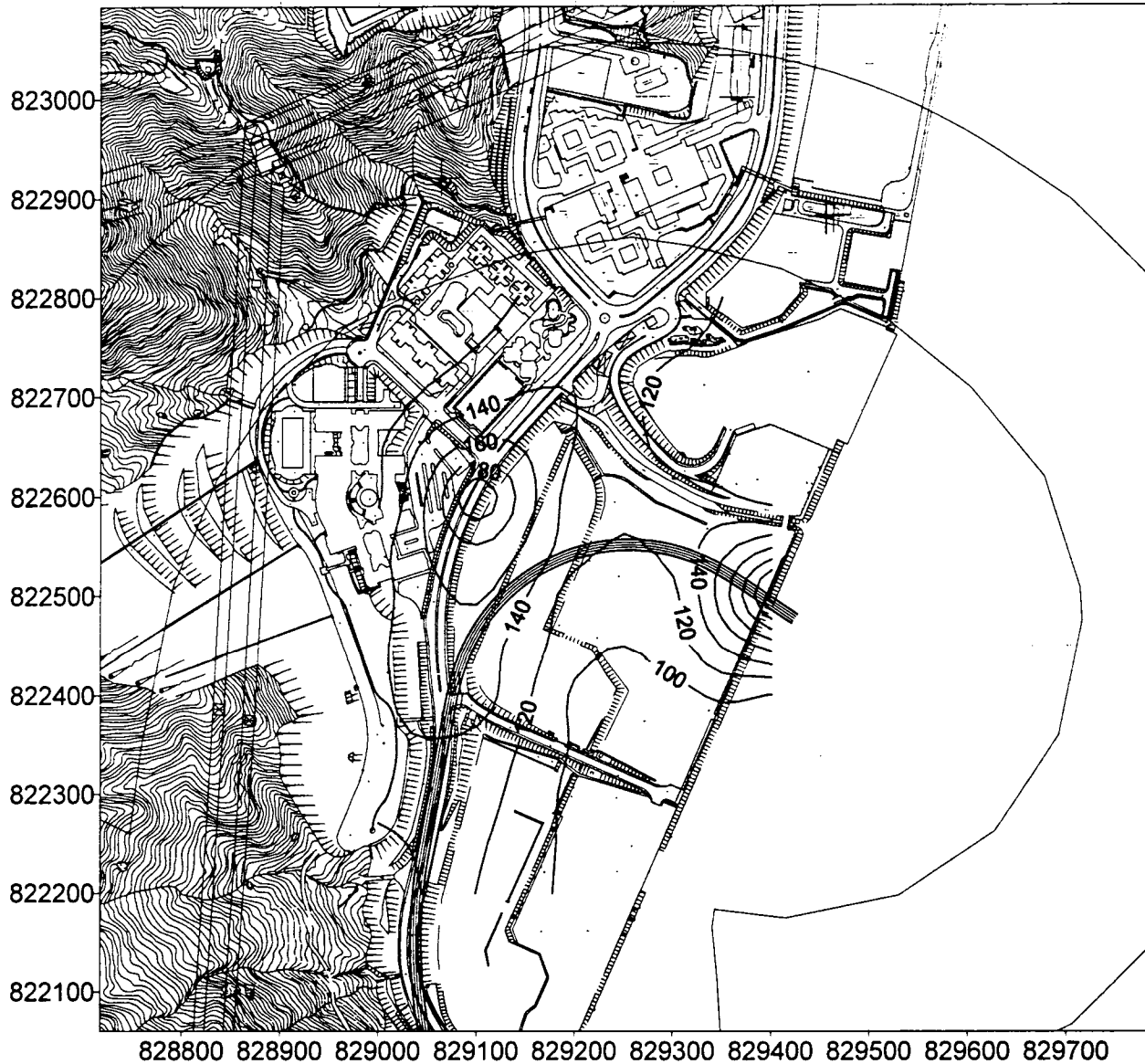
<b>Title</b> Maximum Hourly NO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) at Nam Wan Tunnel Eastern Portal Portal plus Traffic Emissions including Background Level	<b>Scale</b> N/A	<b>Date</b> 26 April 1999	<b>Figure No.</b> 3.5
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**Route 9**  
**Between Tsing Yi and Cheung Sha Wan**  
**Detailed Feasibility Study**

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<b>Title</b> Maximum Hourly NO2 Concentration (ug/m3) at CT9 Terminal Zone Traffic Emission plus Background Level, 1.5 m above ground	<b>Scale</b> N/A	<b>Date</b> 26 April 1999	<b>Figure No.</b> 3.6
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**Route 9**  
**Between Tsing Yi and Cheung Sha Wan**  
**Detailed Feasibility Study**

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<b>Title</b> Maximum Hourly NO2 Concentration (ug/m3) at Mei Foo Sun Chuen Traffic Emission plus Background Level, 1.5 m above ground	<b>Scale</b> N/A	<b>Date</b> 19 April 1999	<b>Figure No.</b> 3.7
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Highways  
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Route 9  
Between Tsing Yi and Cheung Sha Wan  
Detailed Feasibility Study

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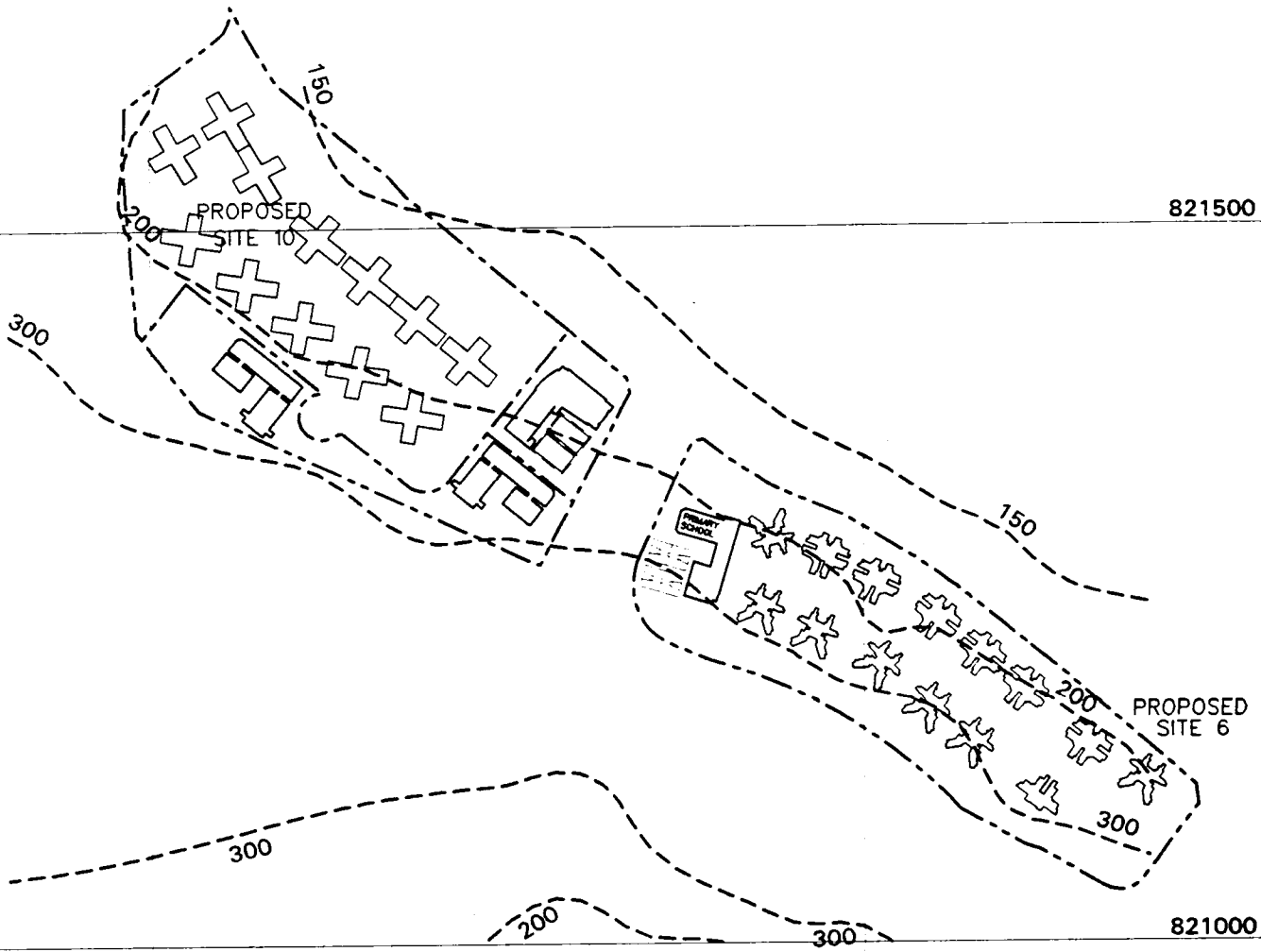
833000 E

833500 E



821500 N

821000 N



PRINTED BY: VIC/DOR 04 MAY 99 R40137  
FILENAME: G:\MTR\NO2\FIG3.DGN

<p>175a</p> <p><b>AQO NO<sub>2</sub> Concentration (ug/m<sup>3</sup>) at Site 6 and Site 10 Northern WKR</b> Traffic Emission plus Background Level, 1.5m above ground</p>	<p>Scale</p> <p>As Shown</p>	<p>Date</p> <p>5 April 1999</p>	<p>Figure No.</p> <p>3.8</p>
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**Route 9**  
**Between Tsing Yi and Cheung Sha Wan**  
**Detailed Feasibility Study**

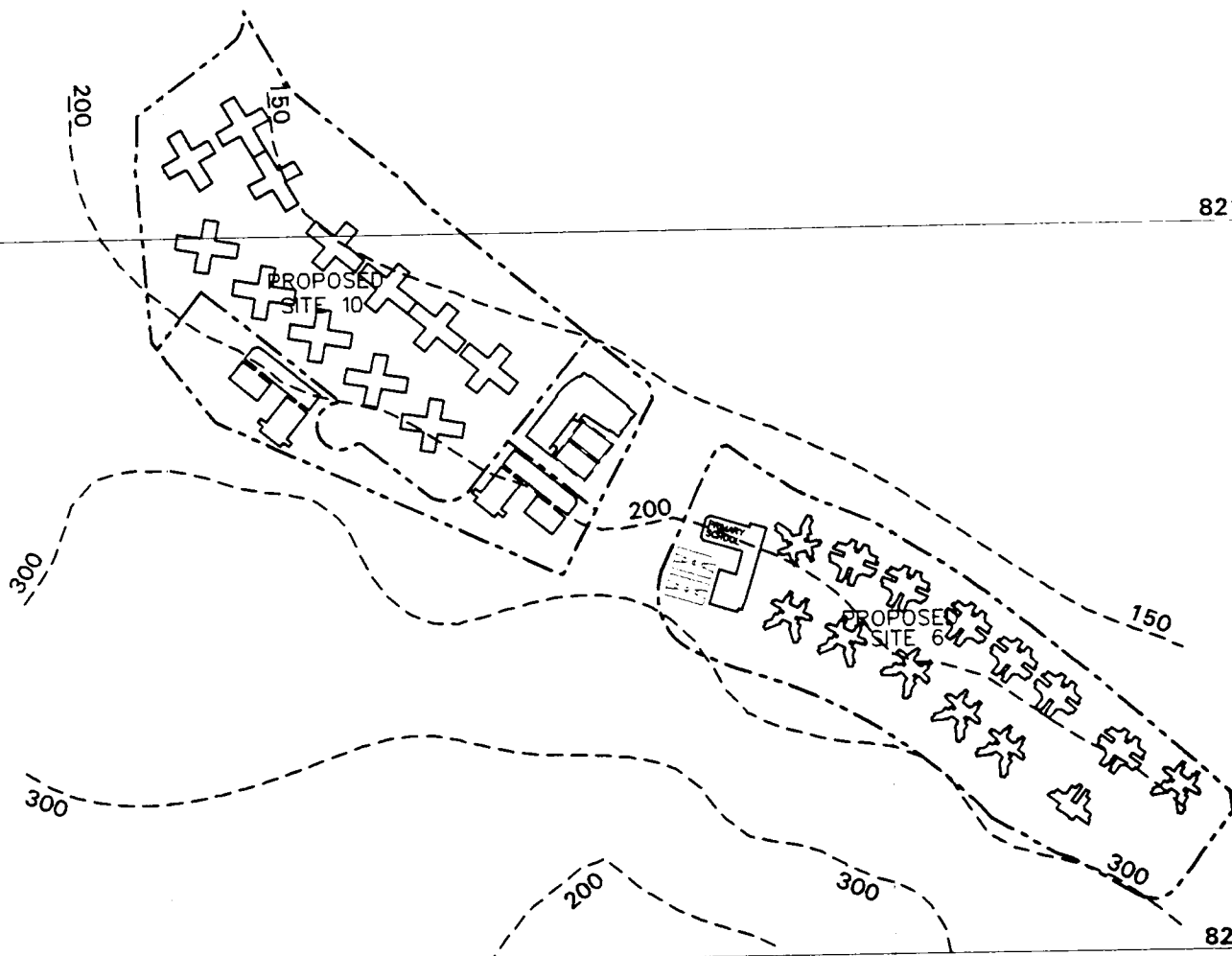


833000 E

833500 E



821500 N



821000 N

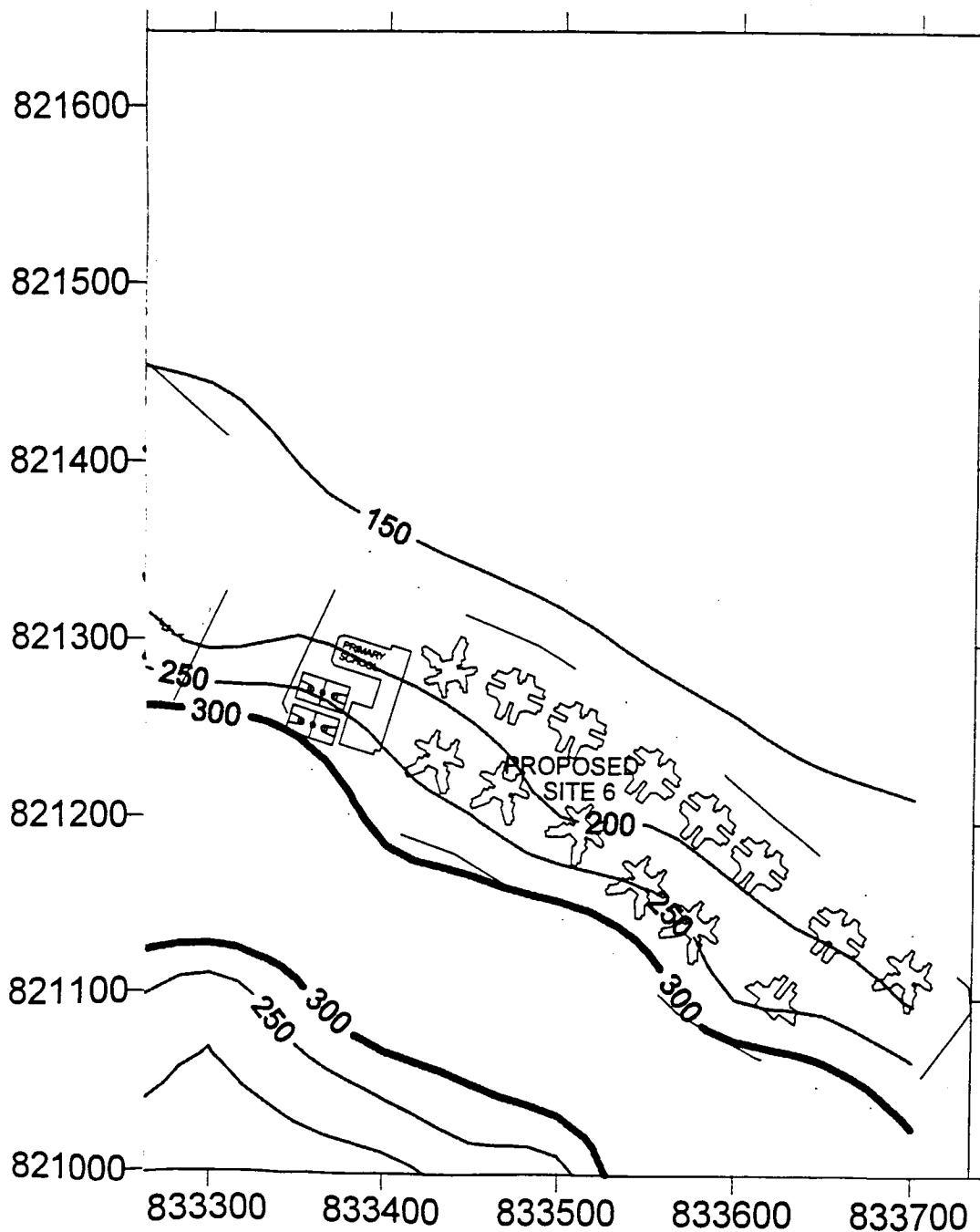
<p>Title</p> <p><b>AQO NO<sub>2</sub> Concentration (ug/m<sup>3</sup>) at Site 6 and Site 10 Northern WKR</b></p> <p>Traffic Emission plus Background Level, 15m above ground</p>	<p>Scale</p> <p><b>As Shown</b></p>	<p>Date</p> <p><b>5 April 1999</b></p>	<p>Figure No.</p> <p><b>3.9</b></p>
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**Route 9**  
**Between Tsing Yi and Cheung Sha Wan**  
**Detailed Feasibility Study**





<b>Title</b> Maximum Hourly NO <sub>2</sub> Concentration (ug/m <sup>3</sup> ) at Site 6 Northern WKR Traffic Emission plus Background Level, 10 m above ground	<b>Scale</b> N/A	<b>Date</b> 6 May 1999	<b>Figure No.</b> 3.10
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821600

821500

821400

821300

821200

821100

821000

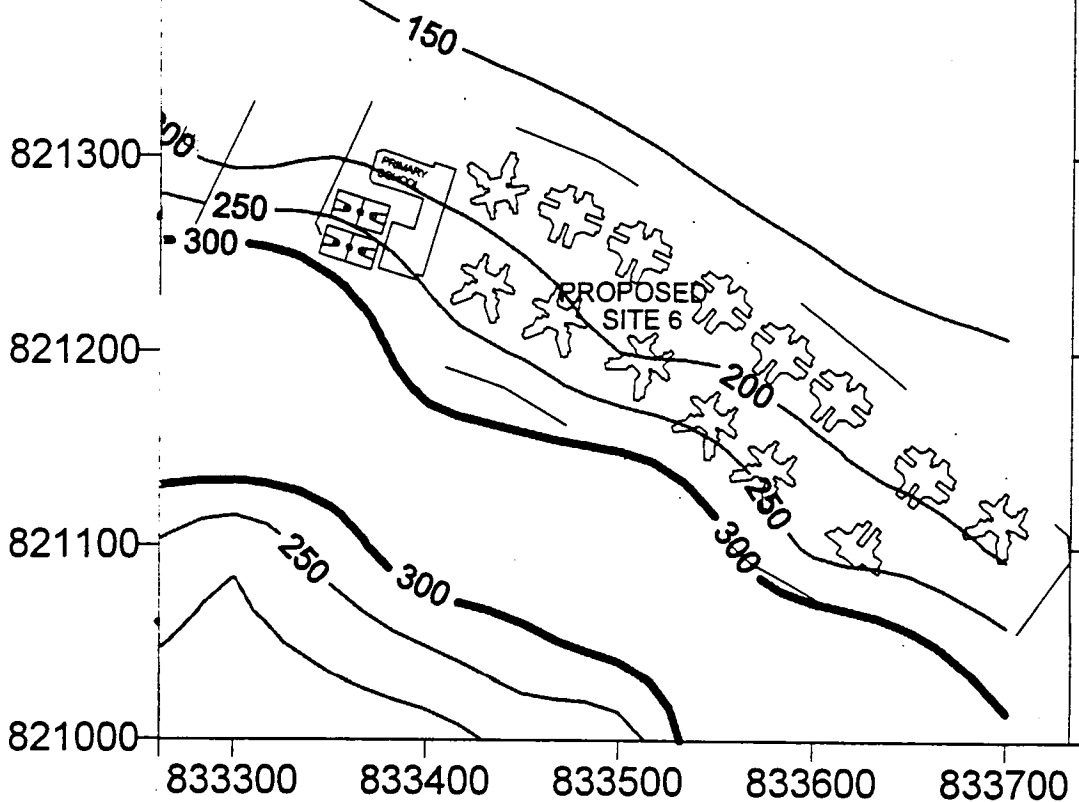
833300

833400

833500

833600

833700



Title  
 Maximum Hourly NO<sub>2</sub> Concentration (ug/m<sup>3</sup>) at  
 Site 6 Northern WKR  
 Traffic Emission plus Background Level, 12 m above ground

Scale  
 N/A

Date  
 6 May 1999

Figure No.  
 3.11

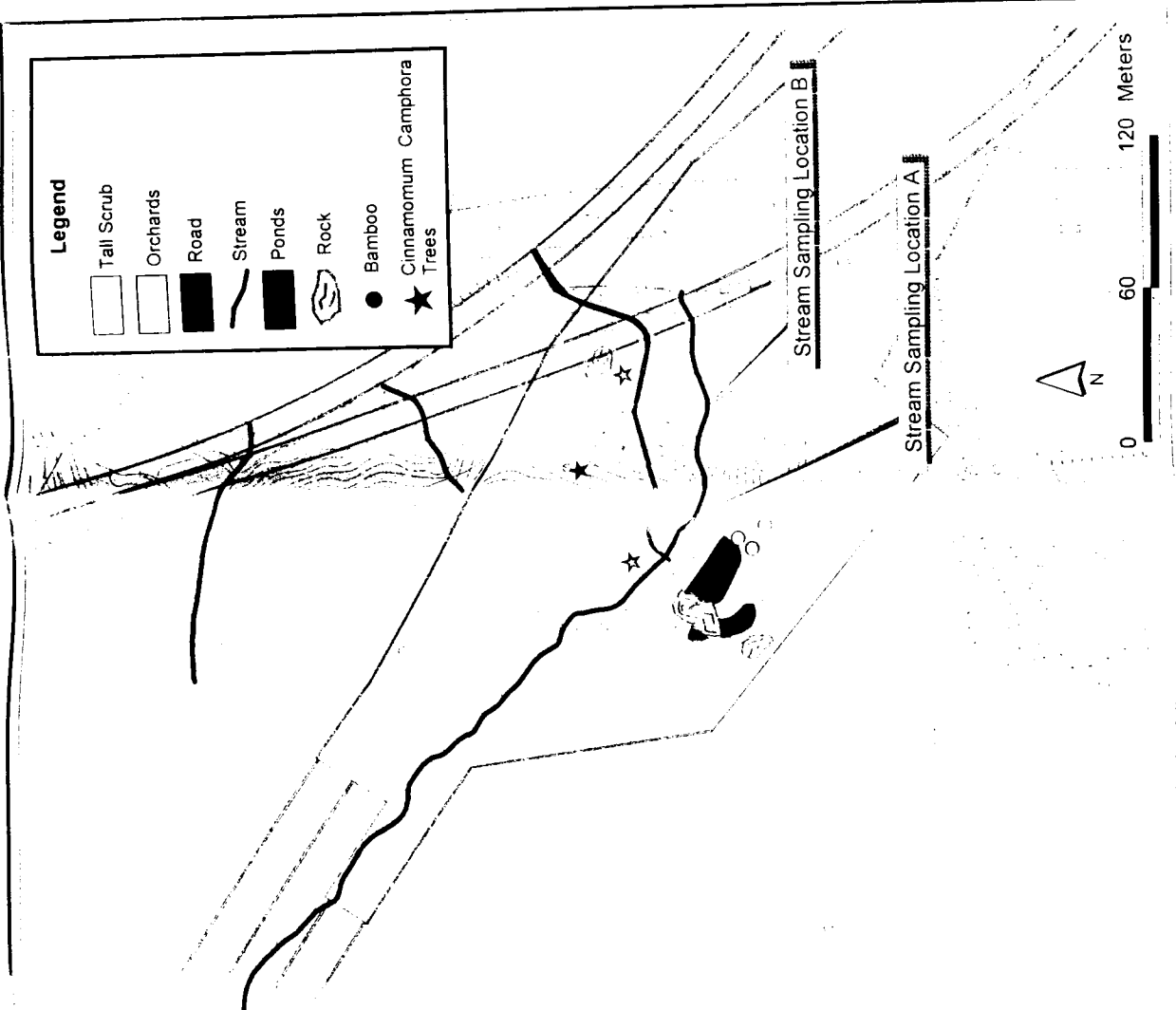
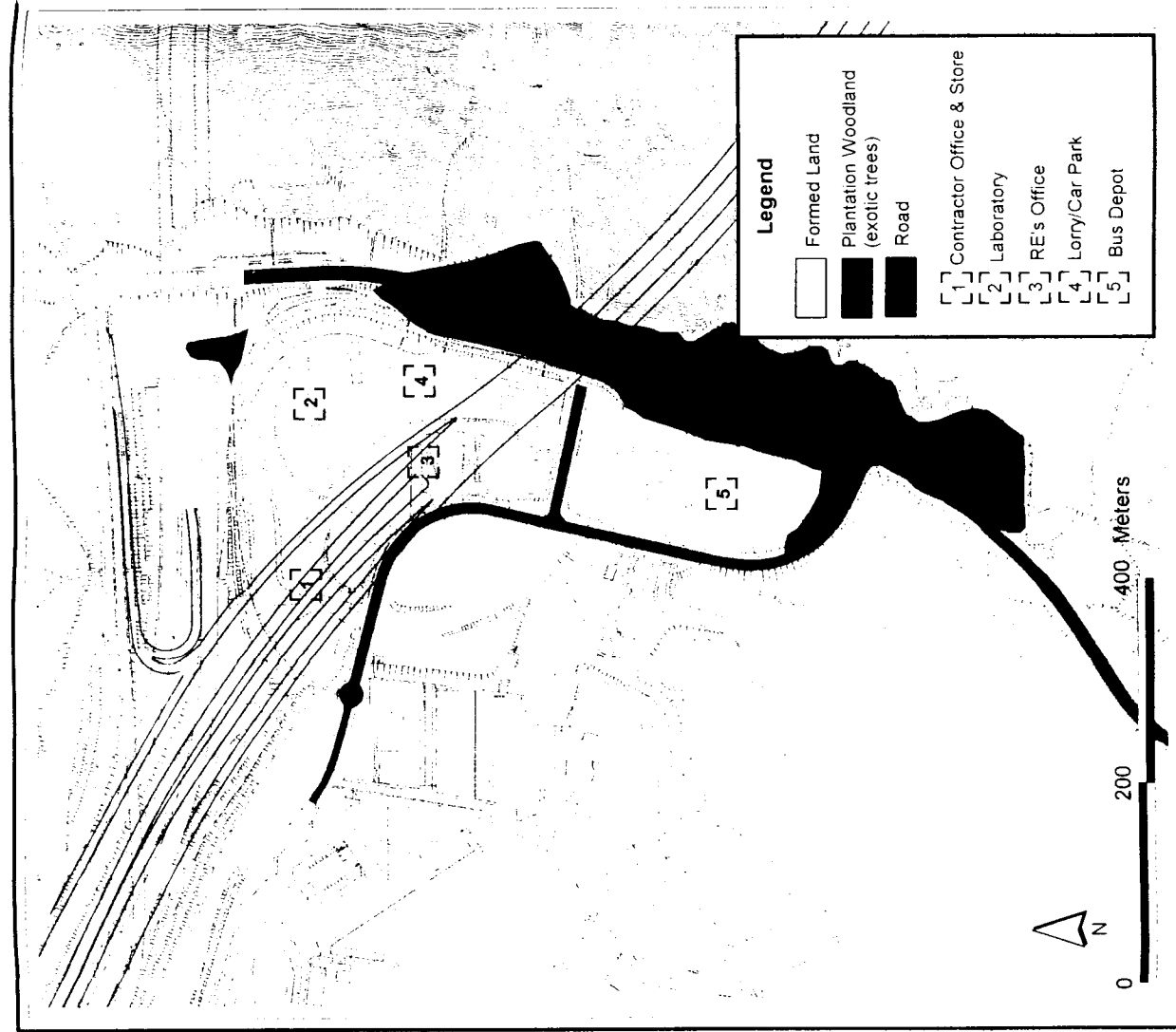


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Route 9  
 Between Tsing Yi and Cheung Sha Wan  
 Detailed Feasibility Study

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**Habitat - Western & Eastern Portals**

Scale

Date April 99

Figure No. 6.1



**Legend**

Route 9 Alignment

**Vegetation Type**

- Abandoned Cultivation
- Bare Soil
- Cultivation
- Grassland
- Low Shrub
- Low Shrub/Grass
- Plantation
- Tall Shrub
- Tall Shrub/Grass
- Woodland

Built-up/Urban Areas



<b>Highways Department</b>	<b>Route 9</b> <b>Between Tsing Yi and Cheung Sha Wan</b> <b>Detailed Feasibility Study</b>		<b>安達諮詢公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small> 	<b>Title</b> Vegetation Cover in Vicinity of R9 Alignment
			<b>Scale</b> April 99	<b>Figure No.</b> 6.2





*Vegetation around the Eastern Portal*



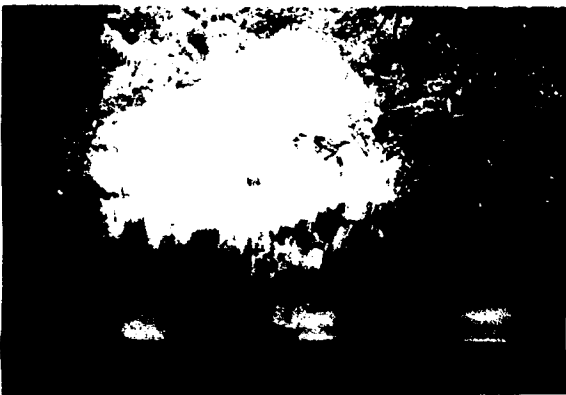
*Pond near Eastern Portal*



*Vegetation South of the Eastern Portal*



*Vegetation around Boulder near Eastern Portal*

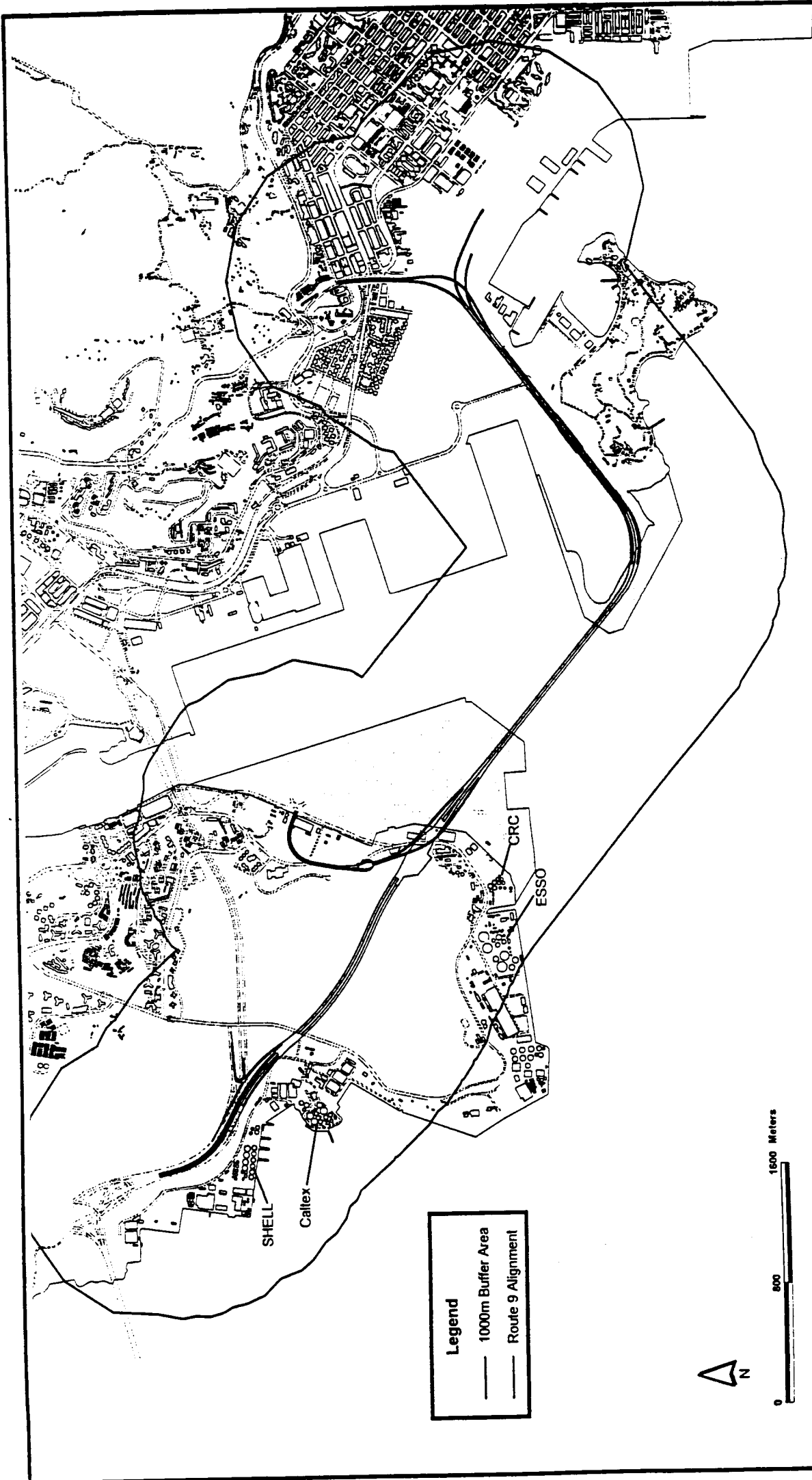


*Pond near Eastern Portal*



*Western Portal Area*

Scale	Date April 99	Title Vegetation Around The Nam Wan Tunnel Portals	Figure No. 6.3
Highways Department	Route 9 Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study	安安建顧問公司 A. Atkins China Ltd a member of the WS Atkins group of companies	




**Legend**

- 1000m Buffer Area
- Route 9 Alignment

Title		R9 Study Area and Phis
Scale	Date	Figure No
	Oct 1998	9.3.1

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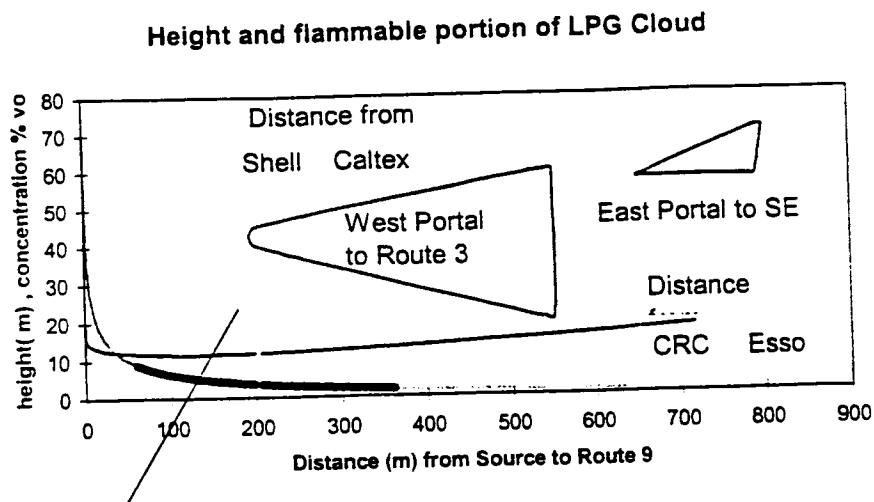


Route 9  
 Between Tsing Yi and Cheung Sha Wan  
 Detailed Feasibility Study



Highways Department

Figure 9.6.1 Worst Case Scenario LPG Clouds Relative to Route 9.



Note: The Figure shows the relative position of the Route 9 carriageway envelopes in the vicinity of the four LPG Terminals.

The upper cloud line shows the effective height of the cloud based on dispersion modelling results for 600 tonne releases and 100kg/s continuous releases. LPG concentrations are less than the flammable limit at the upper cloud limit.

The lower line represent the 3 sections of the LPG cloud as follows:

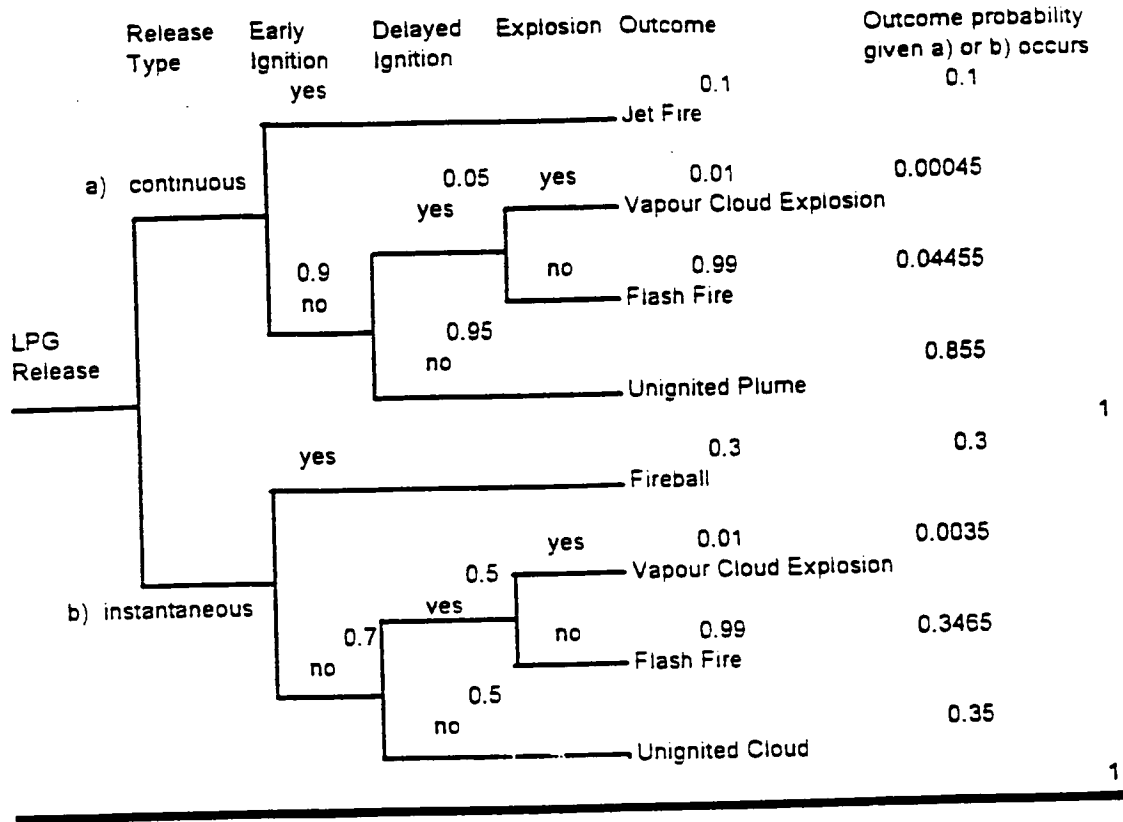
- a) to 60m from source, the cloud is above the flammable limit ( 9.5% v/v in air).
- b) from 60m to 360m, the cloud is within the flammable range (1.9- 9.5% v/v in air).
- c) above 360m, the cloud is dispersed below its lower flammable limit.

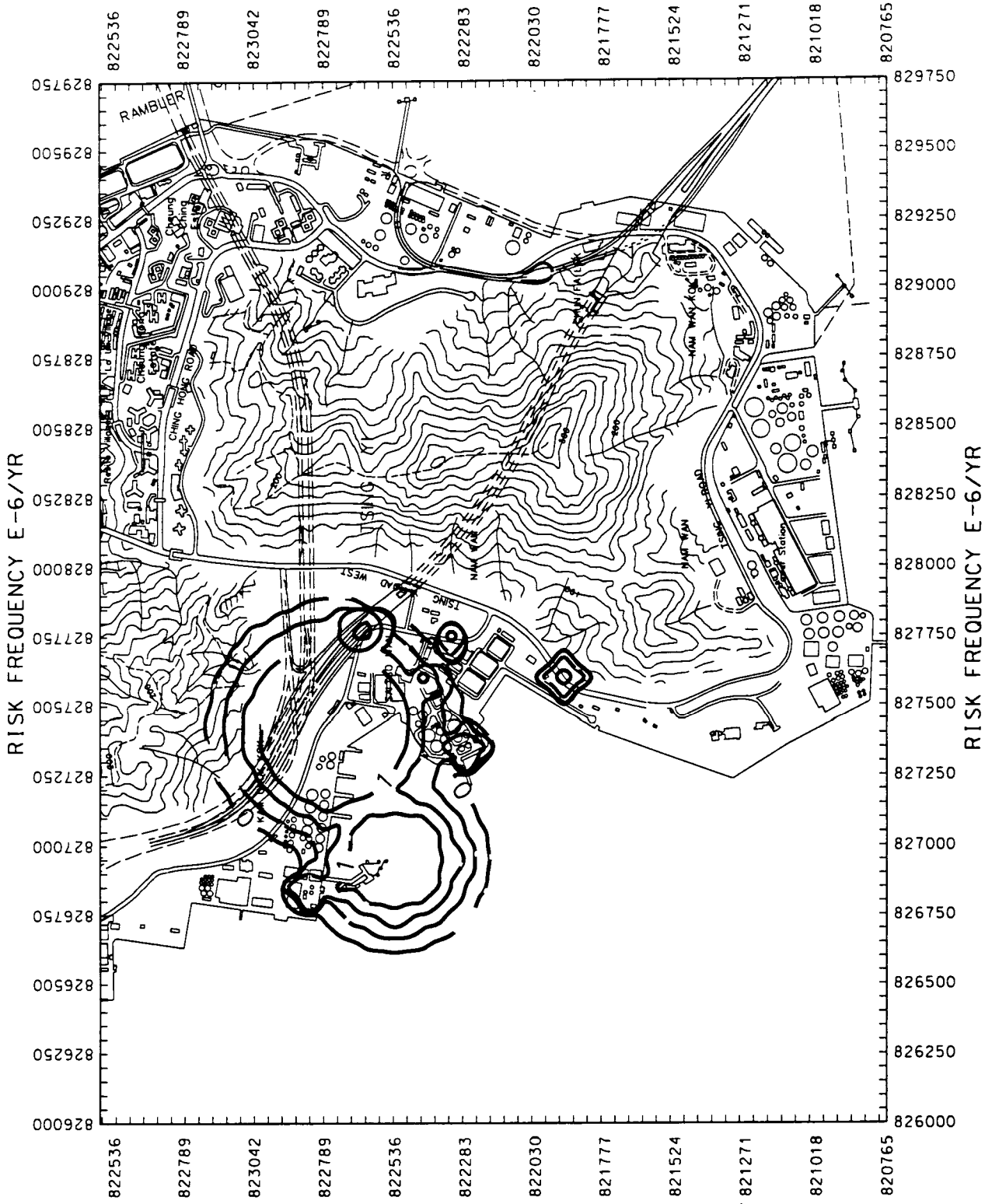
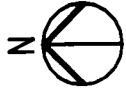
The figure ignores the likelihood of early ignition which would terminate the cloud development in fire or explosion on ignition.

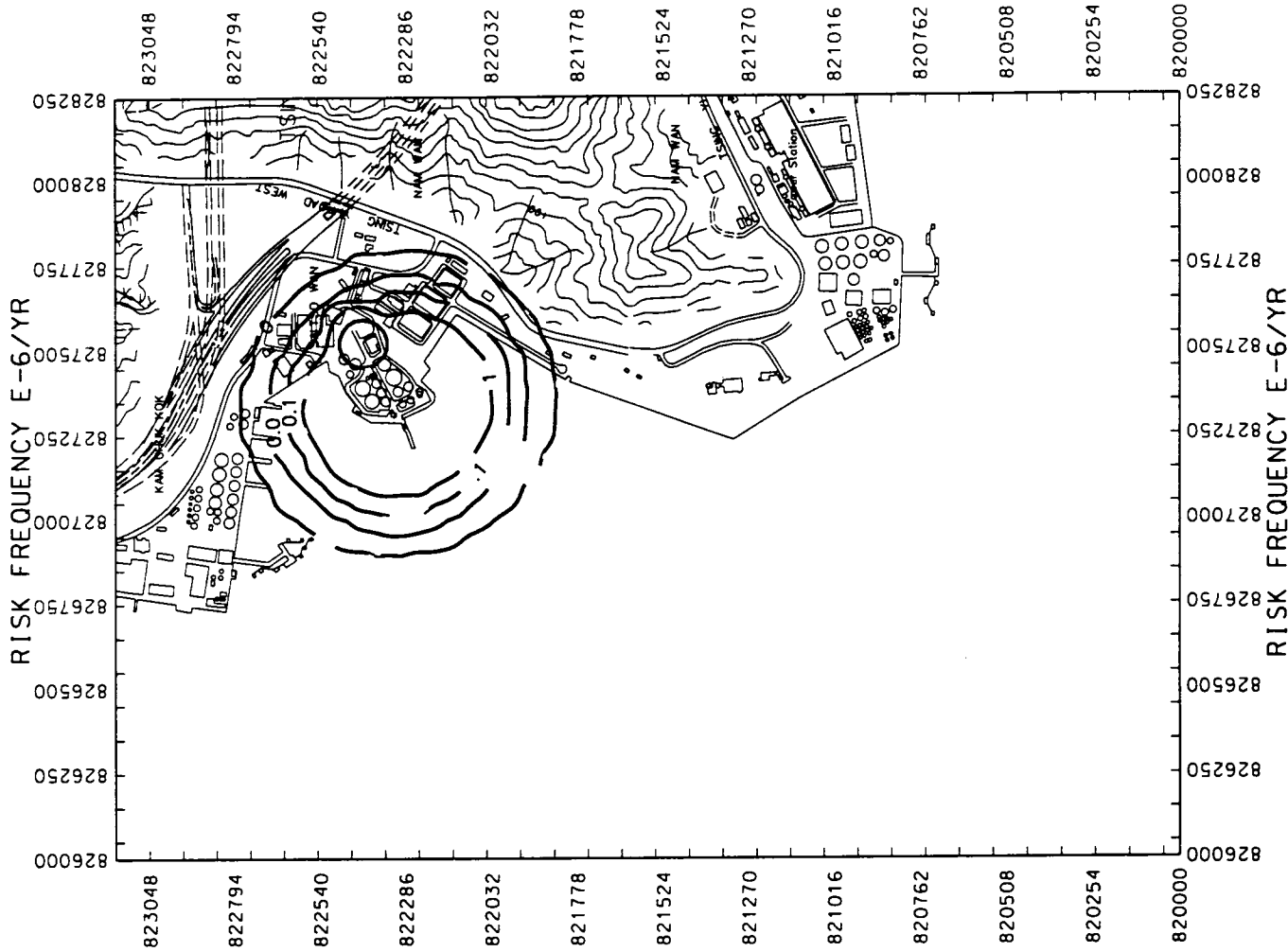
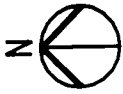
The Route 9 envelopes are based on Portal heights of 25-25m (West) and 63 m East with the carriageway rising away from the portals toward the Route 3 junction and the Stonecutters Bridge.

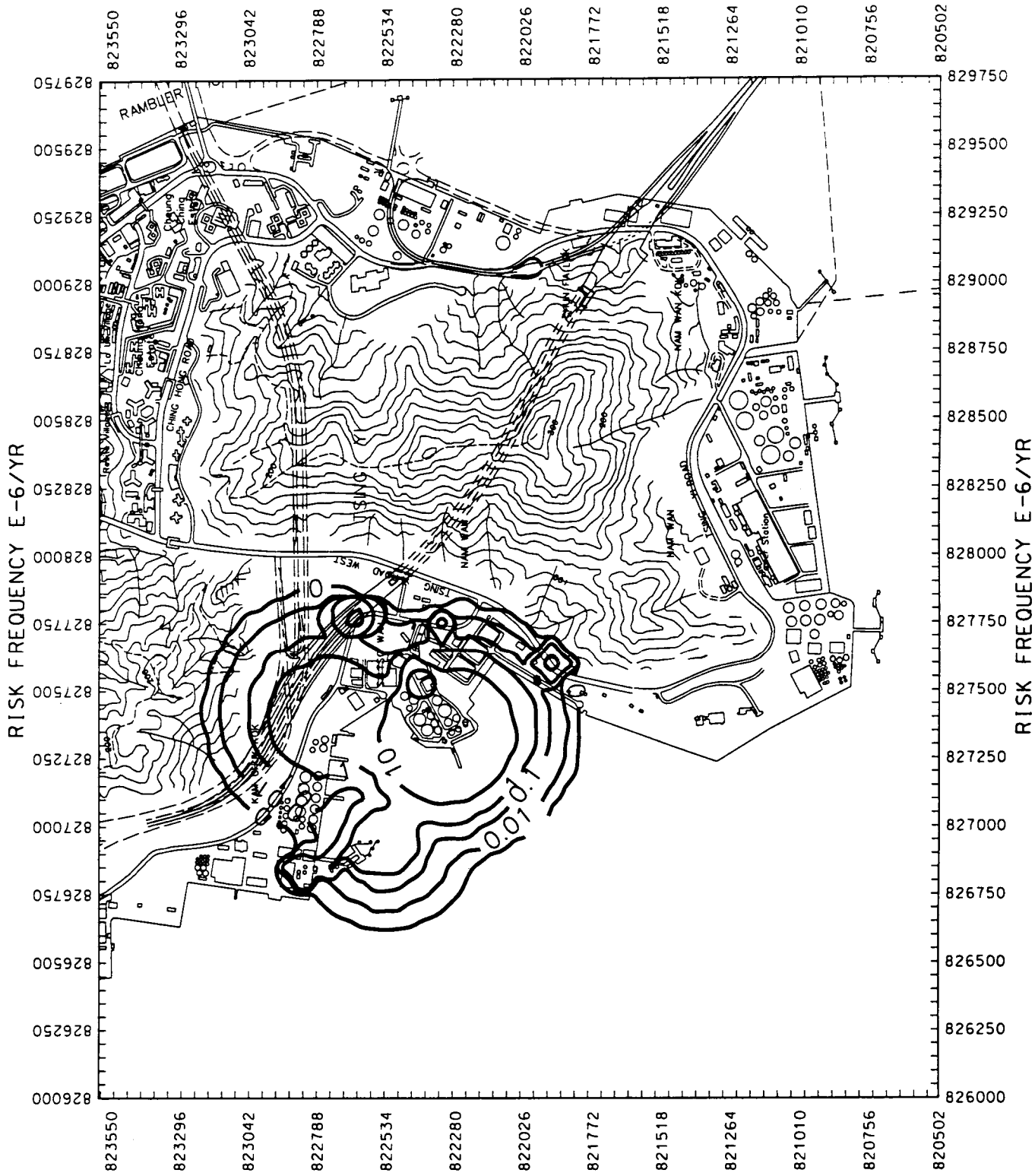
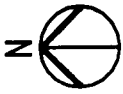
Figure 9.7.1

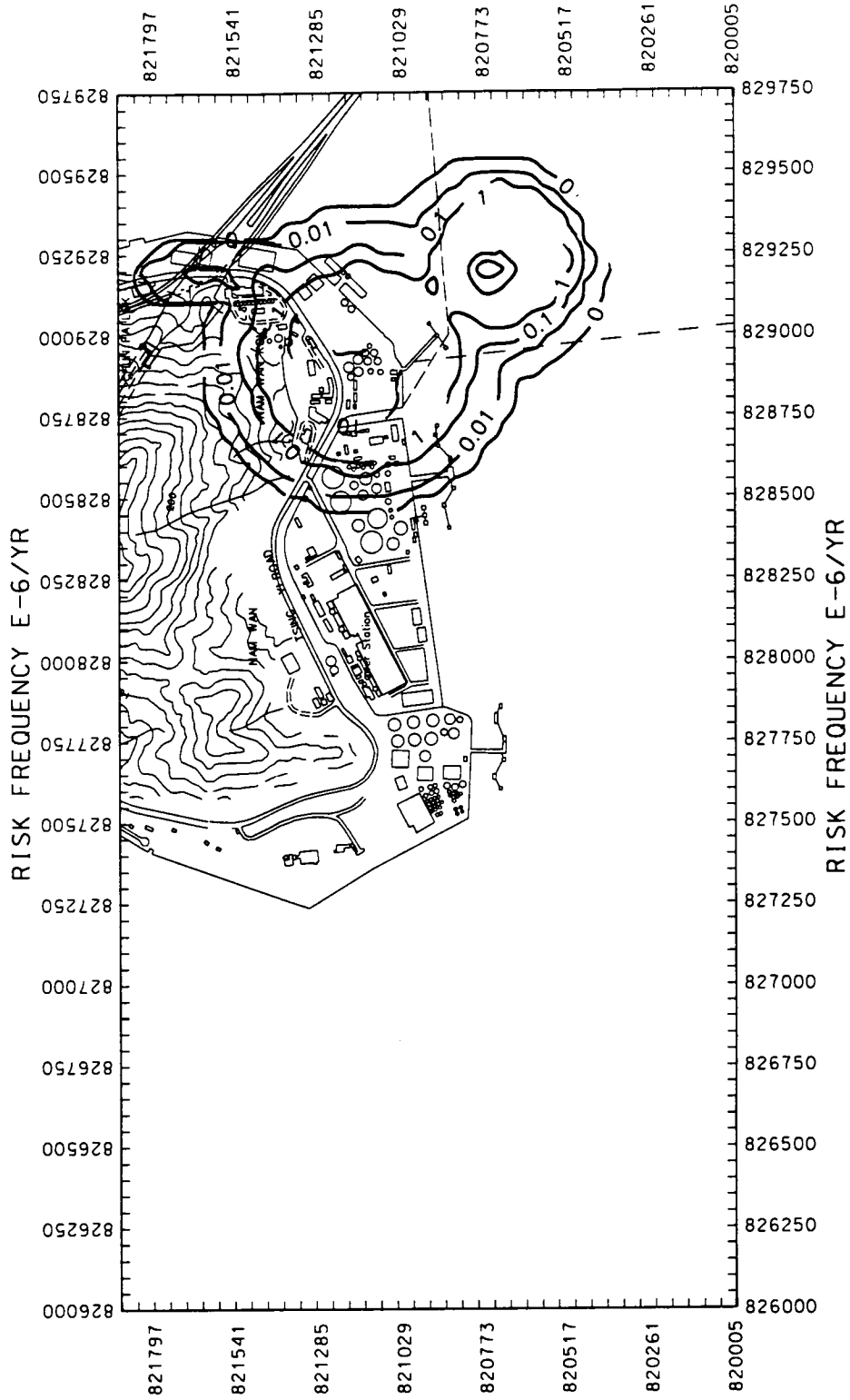
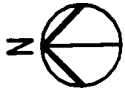
LPG Release Event Tree



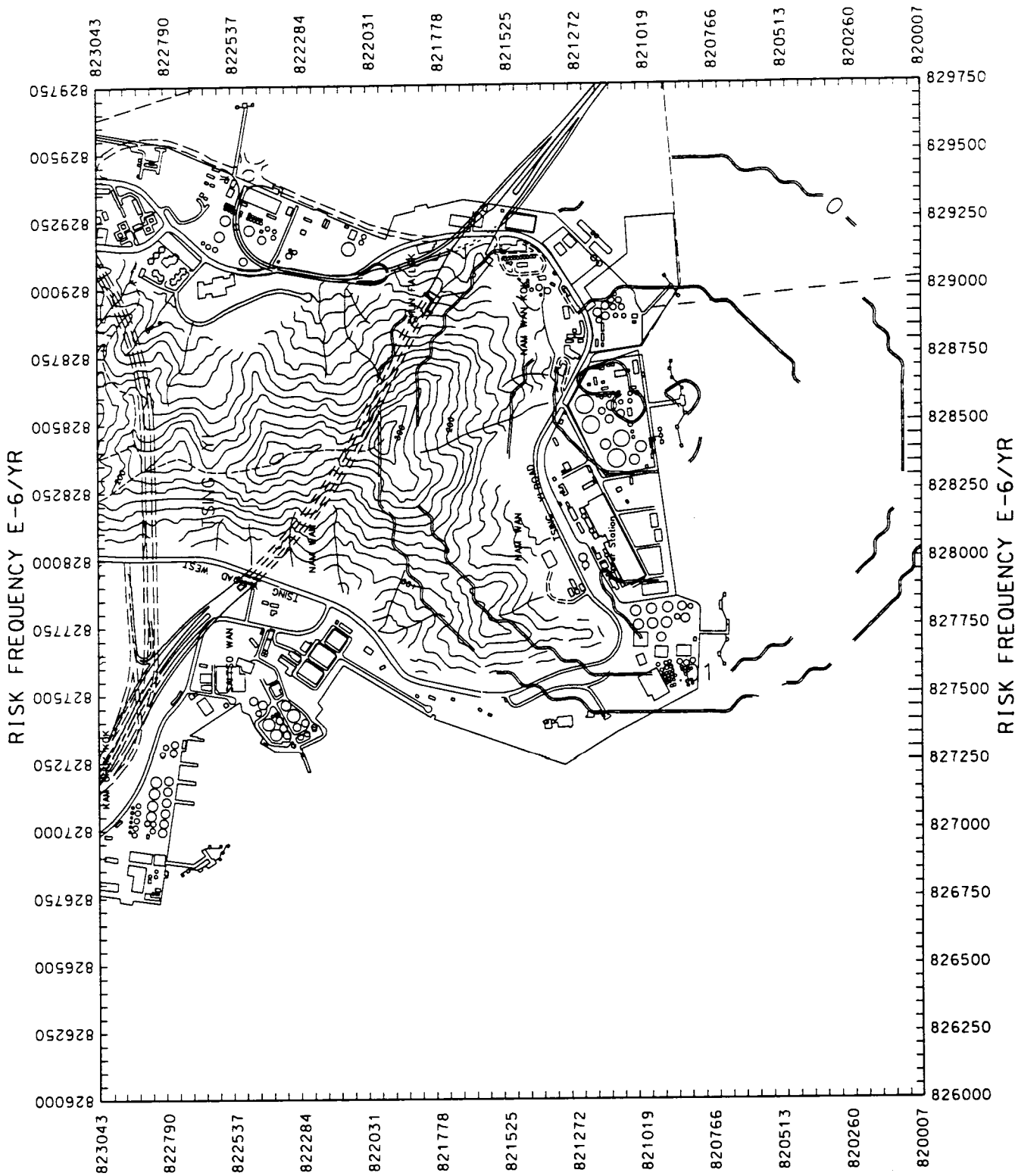
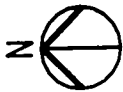


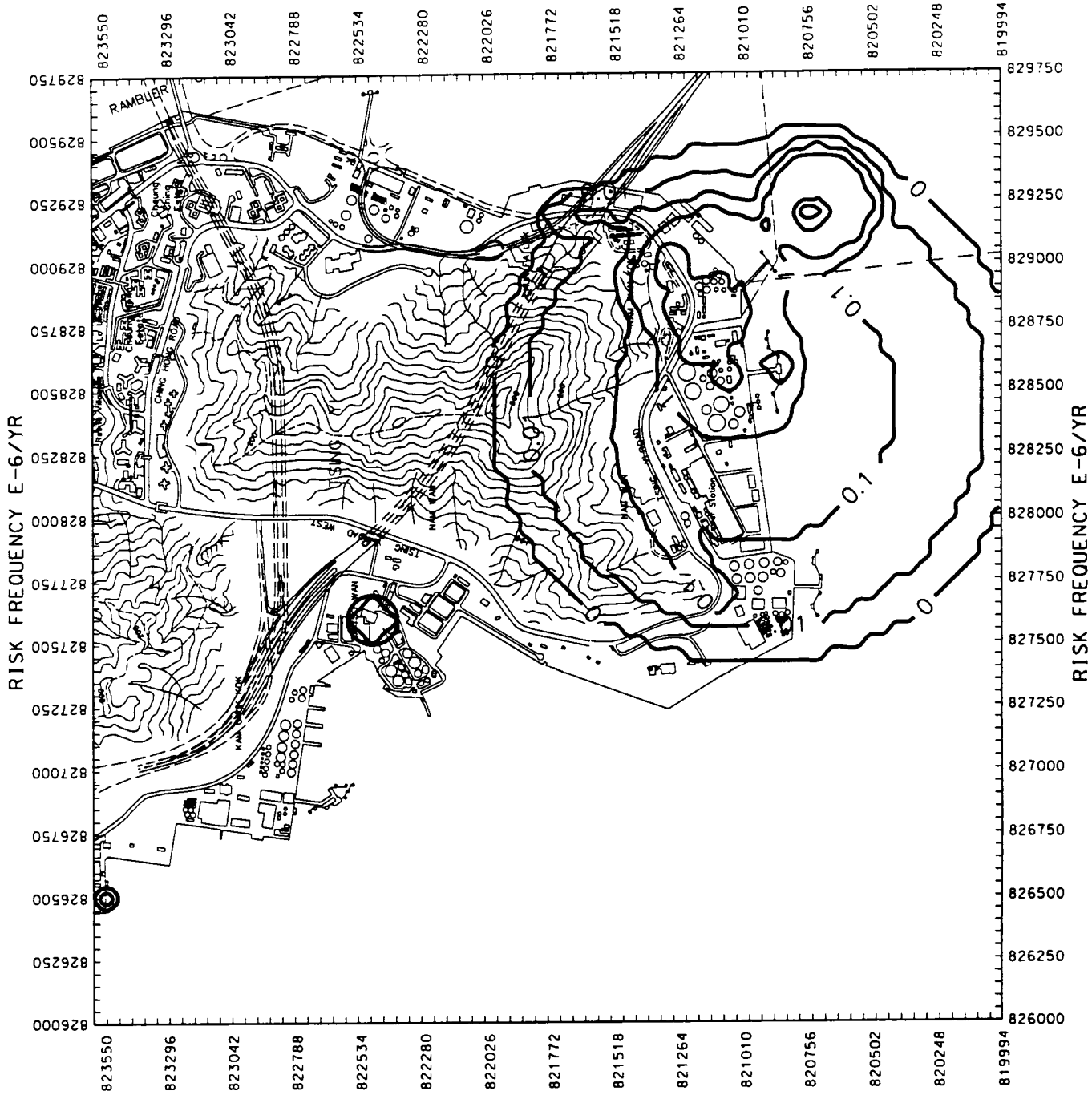
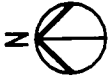












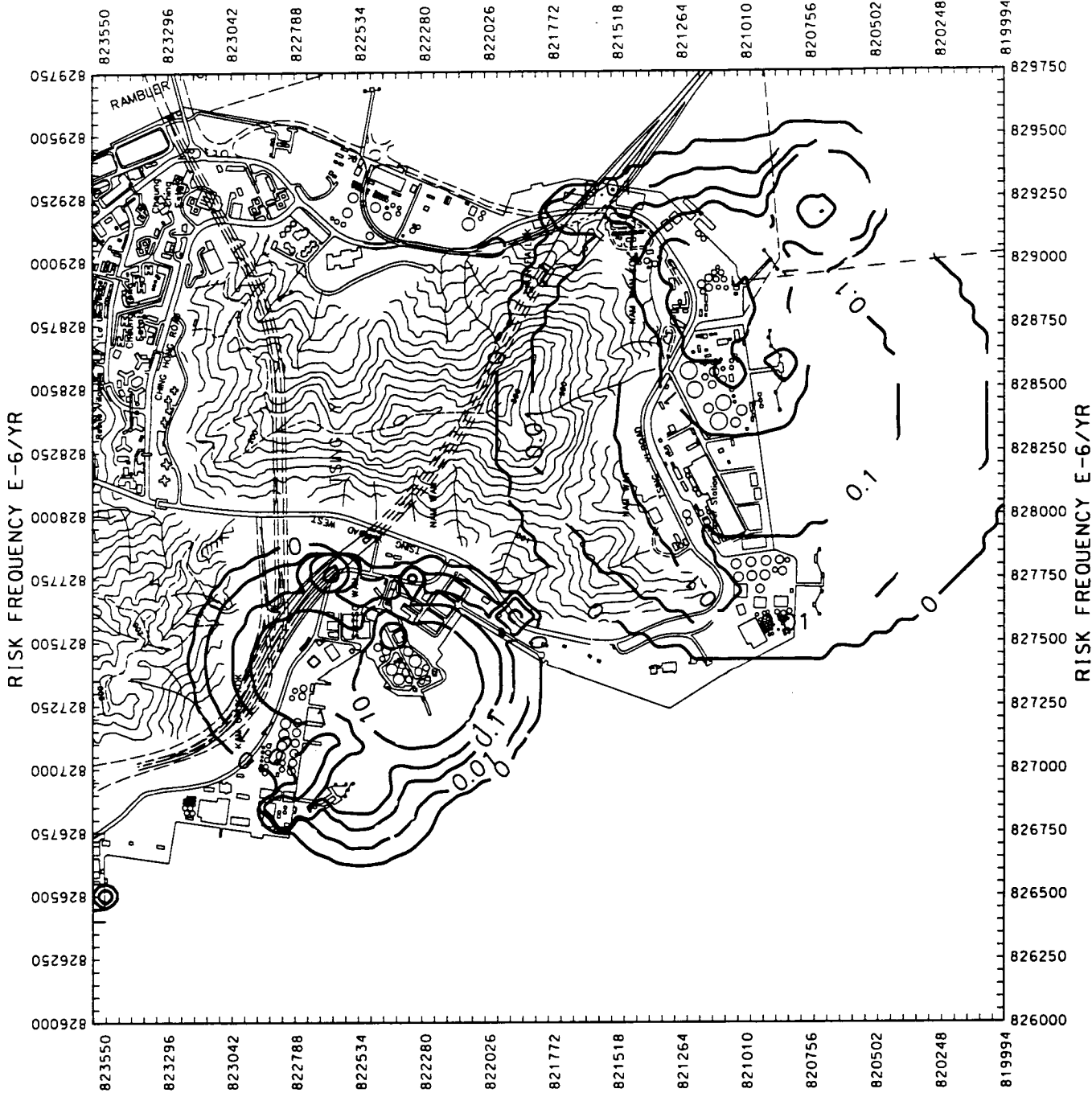
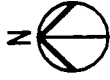


Fig. 9.8.8 Societal Risk Curve FN: SHELL LPG Terminal After (including) Route 9 population

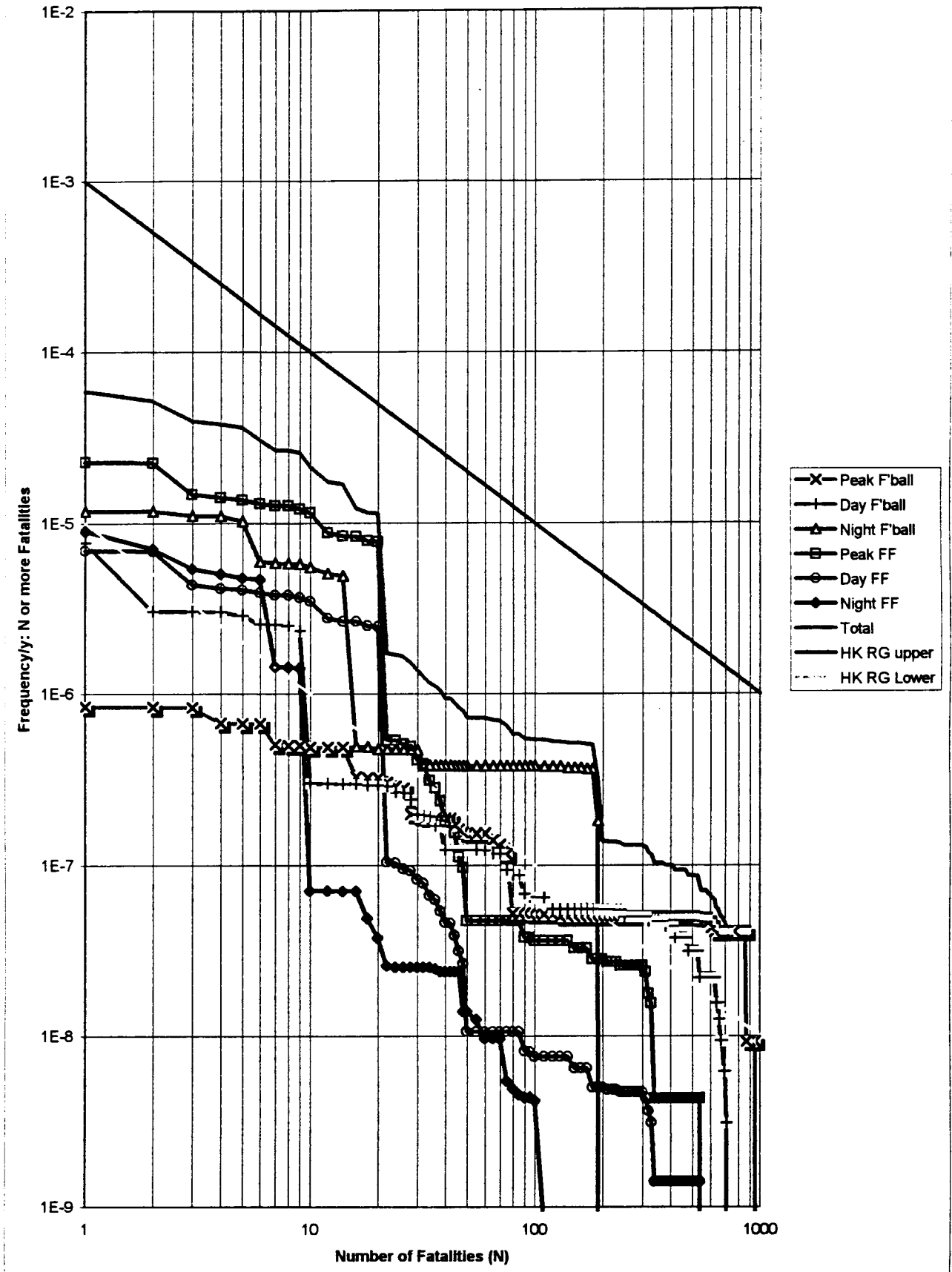


Fig. 9.8.9 Societal Risk Curve FN: Caltex LPG Terminal After (including) Route 9 population

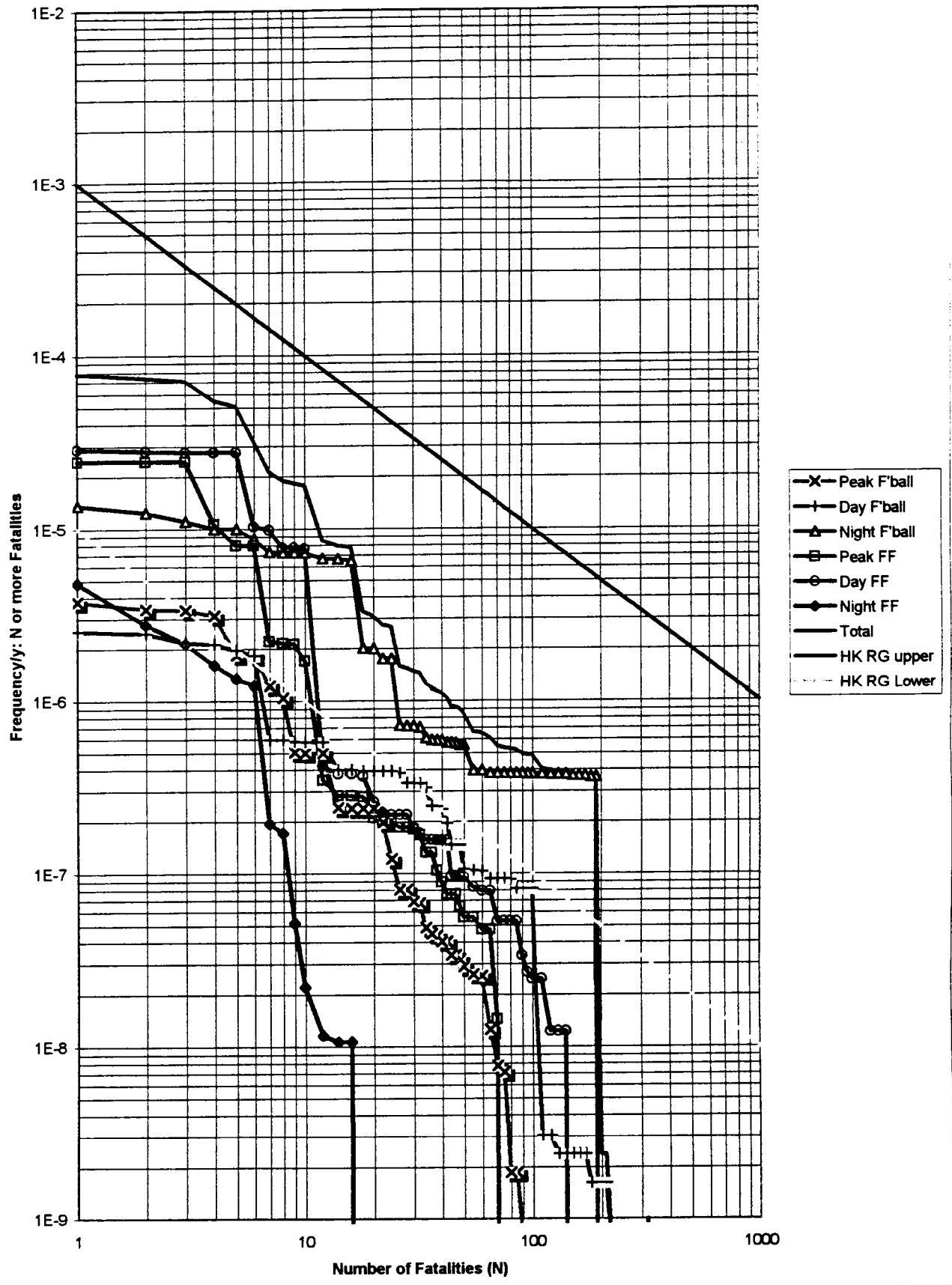
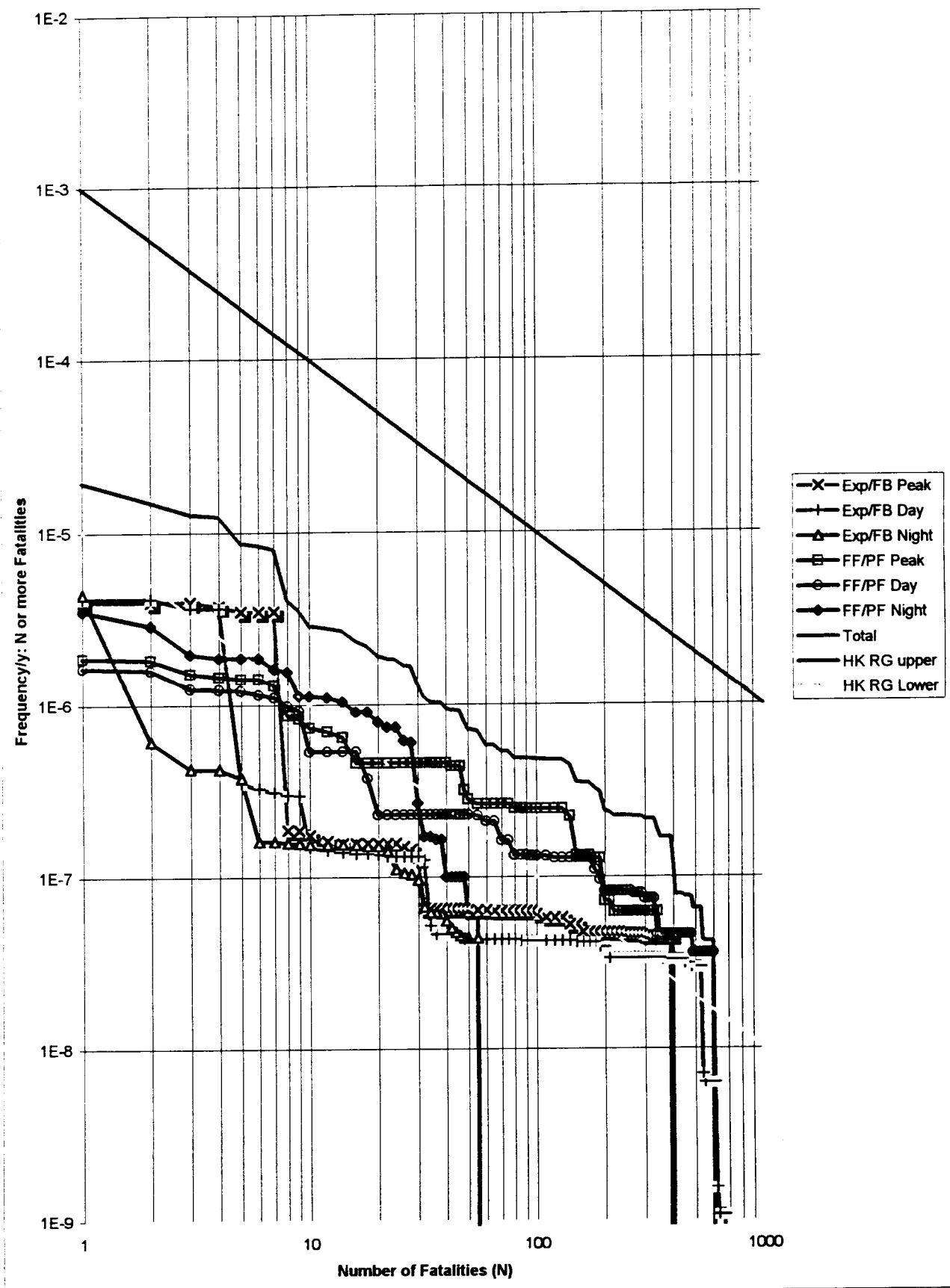
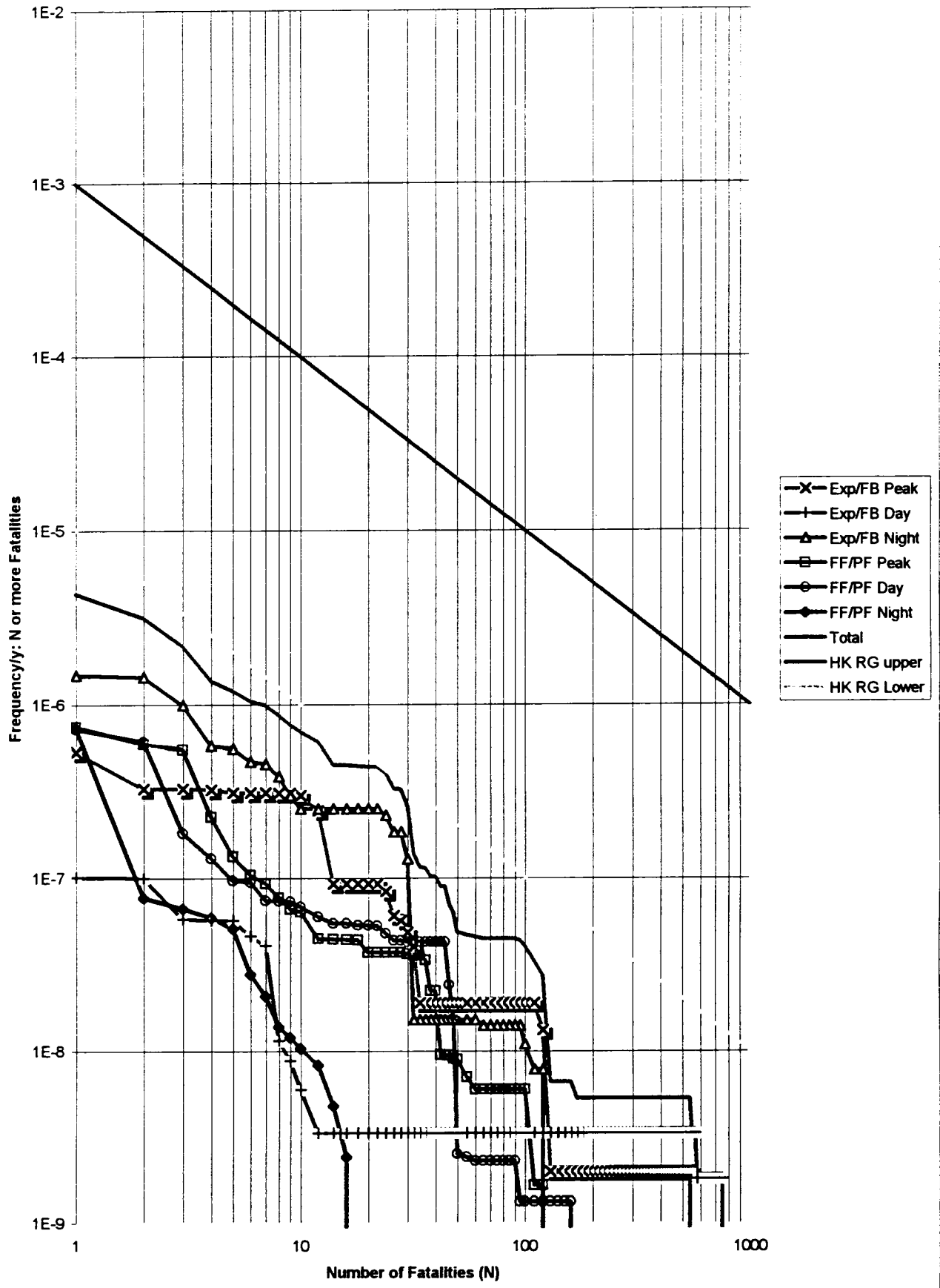
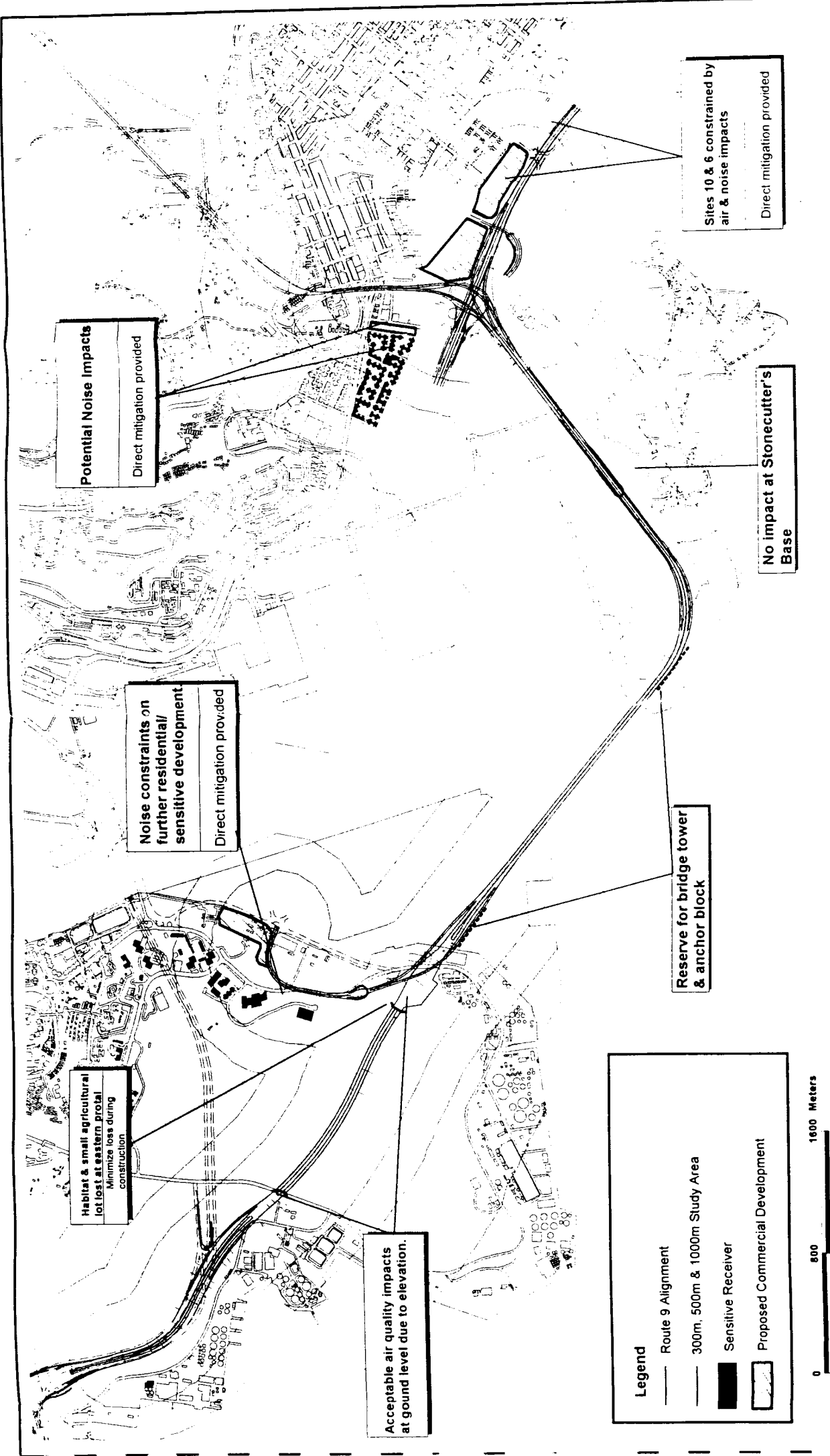


Fig. 9.8.10. Societal Risk Curve FN: CRPC LPG Terminal  
No change with Route 9 population



**Fig. 9.8.11. Societal Risk Curve FN: ESSO LPG Terminal (Mounded Bullets)**  
**No change with Route 9 population**





Potential Noise Impacts  
Direct mitigation provided

Noise constraints on further residential/sensitive development.  
Direct mitigation provided

Habitat & small agricultural lot lost at eastern portal  
Minimize loss during construction

Acceptable air quality impacts at ground level due to elevation.

Reserve for bridge tower & anchor block

No impact at Stonecutter's Base

Sites 10 & 6 constrained by air & noise impacts  
Direct mitigation provided

**Legend**

- Route 9 Alignment
- 300m, 500m & 1000m Study Area
- Sensitive Receiver
- Proposed Commercial Development



 <b>Highways Department</b>	<b>Route 9</b> Between Tsing Yi and Cheung Sha Wan Detailed Feasibility Study	<b>安建顧問公司</b> <b>Atkins China Ltd</b> <small>a member of the WS Atkins group of companies</small>	<b>Landuse Constraints</b>
	<b>ATKINS</b>	Title Scale 1:20000 Date April 99 Figure No. 10.1	