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Appendix A: Road Traffic Noise Calculations for NSRs at Block 2 of Site 1

1 Introduction

- 1.1 Scott Wilson Ltd have been commissioned by the Civil Engineering and Development Department (CEDD) to undertake an Environmental Review (ER) on the Proposed Realignment of Road G1 of the Development near Choi Wan Road and Jordan Valley for the application of the associated Road Gazettal in the context of an approved EIA under Schedule 3. The ER aims to assess the potential noise impacts upon the nearby sensitive receivers, in particular, the residents of Housing Department's Site 1, Site 2, Site 3A and Site B due to the proposed road realignment.
- 1.2 This Review Report presents the assessment methodologies and the potential impacts as identified and evaluated in the ER.

2 Background

- 2.1 In October 1998, Civil Engineering Department (CED) conducted an Environmental Impact Assessment (EIA) study, namely "Planning and Engineering Feasibility Study for Development near Choi Wan Road and Jordan Valley – EIA Final Assessment Report" (the EIA Report), to investigate the environmental feasibility of the development near Choi Wan Road and Jordan Valley (the CWRJV Development). The EIA report was approved under Schedule 3 of Environmental Impact Assessment Ordinance (EIAO) by EPD in April 1999.
- 2.2 As a result of the subsequent change in housing policy, Housing Department (HD) have decided to change the private housing type to public rental in the CWRJV Development. In order to further enhance the site layout and efficiency, it is proposed that a portion of a local road named Road G1, instead of running through and bisecting Site 3A, is to be realigned towards the southern site boundary. Figures 1 and 2 shows the original and the proposed road alignment, respectively.
- 2.3 A meeting was then held on 2 February 2005 by various relevant parties, including CEDD, HD, Environmental Protection Department (EPD), District Planning Office, Highways Department and District Office, to discuss the potential environmental issues, in particular the noise aspect that may arise from the proposed realignment. It was noted that the overall traffic figures would be reduced because of the reduced number of car parks. While it is believed that the noise to be generated from Road G1 would be reduced because of the reduced traffic flows and unchanged traffic mix, the potential noise impacts upon the neighbourhood would have to be reviewed and addressed by undertaking an ER.

3 Identification of Potential Noise Impacts

3.1 Housing Site 1

- 3.1.1 In Site 1, there are 5 residential blocks. Among which, Blocks 1 and 2 are the closest residential towers to the realigned Road G1, with a shortest distance of 54 metres. These high rise blocks will also have a direct line of sight to Road G1. There are thus potential noise impacts upon these residential blocks due to the traffic noise of Road G1.
- 3.1.2 There are also 2 primary schools in Site 1, located on a platform of 20mPD. Since Road G1, to be constructed on Site 3A, is on a platform of 60mPD, despite that the primary schools are located closer to Road G1 than the residential blocks, these schools are sited in the “noise shadow zone” created by the slope and the elevation difference. There would not be direct line of sight from the schools to Road G1. The associated noise impacts are thus not considered to be significant.

3.2 Housing Site 2

- 3.2.1 Site 2 is located to the west of Site 3A. Since Road G1 is proposed to be moved southward, the road traffic would flow slightly away from Site 2 (Figure 2). There are thus not anticipated to be any adverse noise impacts upon Site 2 as a result of the proposed road realignment.

3.3 Housing Site 3A

- 3.3.1 Site 3A is located to the north of Site 1. Instead of running through Site 3A, Road G1 when realigned would be located along the southern boundary of the Site. The distance between Road G1 and the closest noise sensitive residential dwelling will be increased from about 8 metres as in the original alignment (Figure 1) to about 10 m (Figure 2). That is, Road G1 is proposed to be moved away from the sensitive receivers. As advised by HD, the orientations of Blocks 1 and 2 on Site 3A would be relocated such that the facades of these blocks facing Road G1 are to be blank end facades while Block 3 of Site 3A would be sited on an elevated podium by which the traffic noise level at Block 3 would be significantly reduced. No adverse noise impacts are thus expected from this proposed road realignment.

3.4 Housing Site 3B

- 3.4.1 Site 3B is located at a distance of about 130m to the south east of Site 3A and to the east of Site 1. Since no changes are proposed on the portion of Road G1 that is closer to Site 3B, no adverse noise impacts are expected from this proposed road realignment.

3.5 Summary

- 3.5.1 A preliminary screening study of the potential noise impacts upon the nearby housing sties in the CWRJV Development has been conducted.

- 3.5.2 No adverse impacts upon Site 2, Site 3A and Site 3B are anticipated due to the realignment of Road G1. No further assessment would be undertaken in this ER for these sites.
- 3.5.3 For Site 1, the associated noise impacts upon the 2 primary schools are not considered to be significant. No further assessment is considered to be required in this ER. It is noted, however, that there are potential noise impacts upon the residential blocks. An evaluation of the potential noise impacts is provided in the subsequent sections of this Report.

4 Evaluation of Noise Impacts

4.1 Methodology for Calculation of Road Traffic Noise

4.1.1 Computation of the traffic noise levels would be carried out based on the methodology of “Calculation of Road Traffic Noise, 1988.” published by the UK Department of Transport.

4.2 Traffic Flow Data

4.2.1 The traffic data as presented in the Site 1 Environmental Assessment Study (EAS) Report provided by HD under the cover letter of 7 March 2005 (Ref.: HD(CE)587/113/26) have been adopted in this ER.

4.2.2 The traffic data was based on the projected traffic flows of Year 2023, the design year forecast to have the maximum traffic figures within 15 years upon the occupation of the proposed redevelopment. The AM peak hour traffic figures of Road G1, as provided in the above EAS Report, are tabulated in **Table 1** below.

Table 1: Traffic Flow Data of Road G1 (AM Peak flow)

	Traffic Flows (Veh/hr)	% of Heavy Vehicles (>1,500 kg unladen)
East-bound	210	25
West-bound	290	24

4.2.3 Referenced to Section 3.3 of the EAS Report, Transport Department had no comments on the above traffic data. Schematic traffic flow diagram of the latest scheme is shown in **Figure 3**.

4.3 Noise Sensitive Receivers

4.3.1 Based on the results of screening process as discussed above, Block 2 of Site 1 was identified to be the most affected NSR due to the realignment of Road G1, given its close proximity to Road G1 after realignment. A number of assessment points have been identified for Block 2 of Site 1. The locations of the NSRs are shown in **Figure 2**.

4.3.2 The platform where Site 1 is situated is 40 m lower than that of Sites 3A&B where Road G1 is located. The two platforms are separated by a steep slope protected by retaining walls.

4.3.3 As discussed in Section 3.1.2, no quantitative road traffic noise assessment would be carried out for the schools on Site 1 given the fact that a line of sight between the schools and Road G1 does not exist.

4.4 Relevant Assumptions

4.4.1 The road traffic noise due to the realignment of Road G1 is assessed based on the following major assumptions:

- (a) Solid concrete parapet with a minimum height of 1 m is installed along edge of the slope near Road G1 for road safety reasons. The parapet is situated on the edge of the slope and has an average distance of 1.5 m from the nearest road kerb.
- (b) The allowable maximum speed on the road segment is 50 km/h;
- (c) The road segment of concern runs horizontally with little gradient change;
- (d) The road surface is of impervious type;
- (e) Both façade effect and reflection from opposite façade are taken into account.

5 Evaluation of Road Traffic Noise Impact

5.1.1 A summary of the assessment results is provided in **Tables 2(a) to 2(e)**. The values of L_{10} under the original scenario (L_{10} w/o Rd G1) are extracted from Appendix 3.1 of the EAS Final Report provided by HD under the cover letter of 7 March 2005 (Ref.: HD(CE)587/113/26). The traffic forecast adopted in the EAS report was based on the revised number of flats and layout design produced by the latest scheme (Section 3.3 of the EAS Report refers).

Table 2(a): Road Traffic Noise Levels at NSR 2A

Floor	L_{10} w/o Rd G1, dB(A) ¹	L_{10} due to Rd G1, dB(A)	Overall L_{10} , dB(A)	Rd G1 contribution, dB
1/F	68.5	44.9	69	0.0
5/F	69.4	46.1	69	0.0
10/F	68.8	47.8	69	0.0
15/F	68.5	49.8	69	0.1
20/F	69.1	52.2	69	0.1
25/F	69.3	54.1	69	0.1
30/F	69.4	55.2	70	0.2
35/F	69.3	55.6	69	0.2
40/F	69.2	55.7	69	0.2

5.1.2 The above table reveals that the noise impacts upon NSR 2A without the realigned Road G1 range from L_{10} 68.5dB(A) to L_{10} 69.4dB(A). This is in compliance with the HKPSG L_{10} 70dB(A) criterion. In addition, the proposed realigned Road G1 would contribute less than 1 dB to the overall noise levels (only up to 0.2 dB). After taking the realigned Road G1 into account, the overall L_{10} would be within 70 dB(A). The proposed realignment of Road G1 is thus unlikely to have any adverse noise impacts on NSR 2A.

Table 2(b): Road Traffic Noise Levels at NSR 2B

Floor	L_{10} w/o Rd G1, dB(A)	L_{10} due to Rd G1, dB(A)	Overall L_{10} , dB(A)	Rd G1 contribution, dB
1/F	72.8	50.3	73	0.0
5/F	73.2	51.9	73	0.0
10/F	72.2	54.5	72	0.1
15/F	71.5	58.3	72	0.2
20/F	71.5	61.9	72	0.4
25/F	71.6	63.2	72	0.6
30/F	71.5	63.4	72	0.6
35/F	71.4	63.2	72	0.6
40/F	71.3	63.0	72	0.6

5.1.3 The above table reveals that the noise impacts upon NSR 2B without the realigned Road G1 range from L_{10} 71.3dB(A) to L_{10} 73.2dB(A), which exceed the HKPSG L_{10} 70dB(A) criterion. The predicted results also indicate that the proposed realigned Road G1 would contribute less than 1 dB (only up to 0.6dB) to the overall noise levels. The noise contribution from the proposed Road G1 is thus not considered to impose significant impacts on NSR 2B.

Table 2(c): Road Traffic Noise Levels at NSR 2C

Floor	L_{10} w/o Rd G1, dB(A)	L_{10} due to Rd G1, dB(A)	Overall L_{10} , dB(A)	Rd G1 contribution, dB
1/F	70.4	49.0	70	0.0
5/F	71.6	50.8	72	0.0
10/F	70.7	53.6	71	0.1
15/F	69.2	57.7	69	0.3
20/F	68.5	61.6	69	0.8
25/F	67.9	62.8	69	1.2
30/F	67.3	62.9	69	1.3
35/F	66.8	62.6	68	1.4
40/F	66.4	62.2	68	1.4

5.1.4 The above table reveals that the noise impacts upon NSR 2C without the realigned Road G1 range from L_{10} 66.4dB(A) to L_{10} 71.6dB(A). The noise levels for 5/F and 10/F are predicted to be exceeding the HKPSG L_{10} 70dB(A) criterion. However, the contribution from the proposed realigned Road G1 to the overall noise levels at these floors of concern is less than 1 dB (only up to 0.1dB). Noise levels predicted for other floors are in compliance with the HKPSG L_{10} 70dB(A) criterion. The noise contribution from the proposed Road G1 is thus not considered to impose significant impacts on NSR 2C.

Table 2(d): Road Traffic Noise Levels at NSR 2D

Floor	L_{10} w/o Rd G1, dB(A)	L_{10} due to Rd G1, dB(A)	Overall L_{10} , dB(A)	Rd G1 contribution, dB
1/F	70.7	49.0	71	0.0
5/F	71.4	50.7	71	0.0
10/F	70.4	53.5	70	0.1
15/F	68.9	57.4	69	0.3
20/F	68.3	61.2	69	0.8
25/F	67.7	62.5	69	1.2
30/F	67.2	62.7	69	1.3
35/F	66.7	62.4	68	1.4
40/F	66.3	62.1	68	1.4

5.1.5 Table 2(d) reveals that the noise impacts upon NSR 2D without the realigned Road G1 range from L_{10} 66.3dB(A) to L_{10} 71.4dB(A). The noise levels for 1/F and 5/F are predicted to be exceeding the HKPSG L_{10} 70dB(A) criterion. However, the contribution from the proposed realigned Road G1 to the overall noise levels at these floors of concern is less than 1 dB. Noise levels predicted for other floors are in compliance with the HKPSG L_{10} 70dB(A) criterion. The noise contribution from the proposed Road G1 is thus not considered to impose significant impacts on NSR 2D.

Table 2(e): Road Traffic Noise Levels at NSR 2E

Floor	L_{10} w/o Rd G1, dB(A)	L_{10} due to Rd G1, dB(A)	Overall L_{10} , dB(A)	Rd G1 contribution, dB
1/F	76.0	48.0	76	0.0
5/F	74.8	49.7	75	0.0
10/F	73.1	52.4	73	0.0
15/F	71.3	56.2	71	0.1
20/F	70.5	60.0	71	0.4
25/F	69.8	61.4	70	0.6
30/F	69.2	61.6	70	0.7
35/F	68.7	61.4	69	0.7
40/F	68.2	61.0	69	0.8

5.1.6 Table 2(e) reveals that the noise impacts upon NSR 2E without the realigned Road G1 range from L_{10} 68.2dB(A) to L_{10} 76dB(A). The noise levels for 1/F, 5/F, 10/F, 15/F and 20/F are predicted to be exceeding the HKPSG L_{10} 70dB(A) criterion. However, the contribution from the proposed realigned Road G1 to the overall noise levels at these floors of concern is less than 1 dB (only up to 0.4dB). Noise levels predicted for other floors are in compliance with the HKPSG L_{10} 70dB(A) criterion. The noise contribution from the proposed Road G1 is thus not considered to impose significant impacts on NSR 2E.

5.1.7 In conclusion, the proposed realignment of Road G1 is unlikely to have adverse noise impact on the NSRs at Block 2 of Site 1.

6 Conclusion

- 6.1 An Environmental Review on the Proposed Realignment of Road G1 of the Development near Choi Wan Road and Jordan Valley for the application of the associated Road Gazettal has been completed. The assessment concludes that the noise impact upon Housing Department's Site 1, Site 2, Site 3A and Site 3B due to the proposed road realignment is not worse than that before the realignment.
- 6.2 If there are deviations from the assumptions made in this ER on traffic mix and volume, housing block layout, facade types, etc. as a result of future changes in housing development planning / design parameters, HD will address the additional noise impact, if any, so arising in their detailed EASs for the housing development.

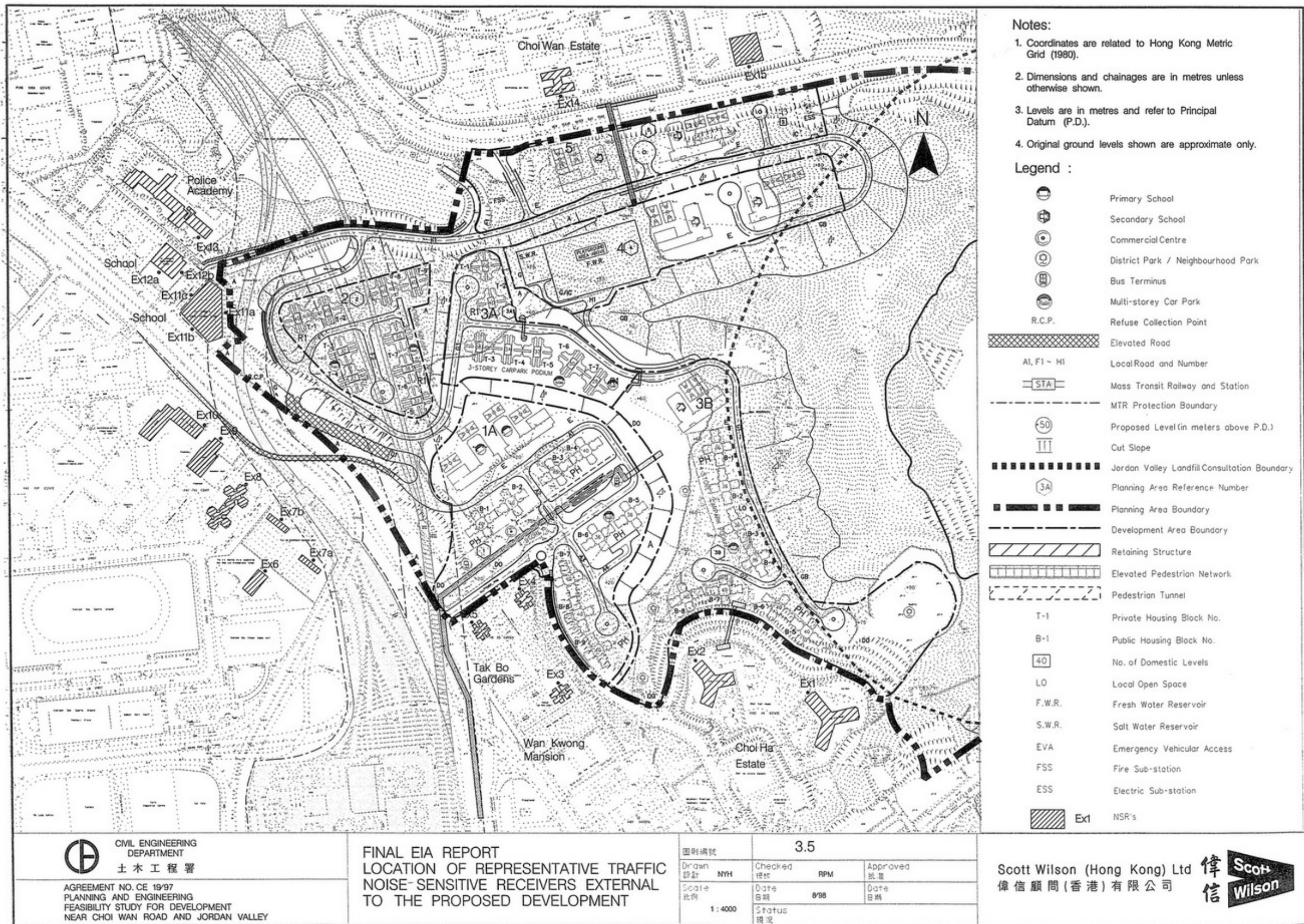
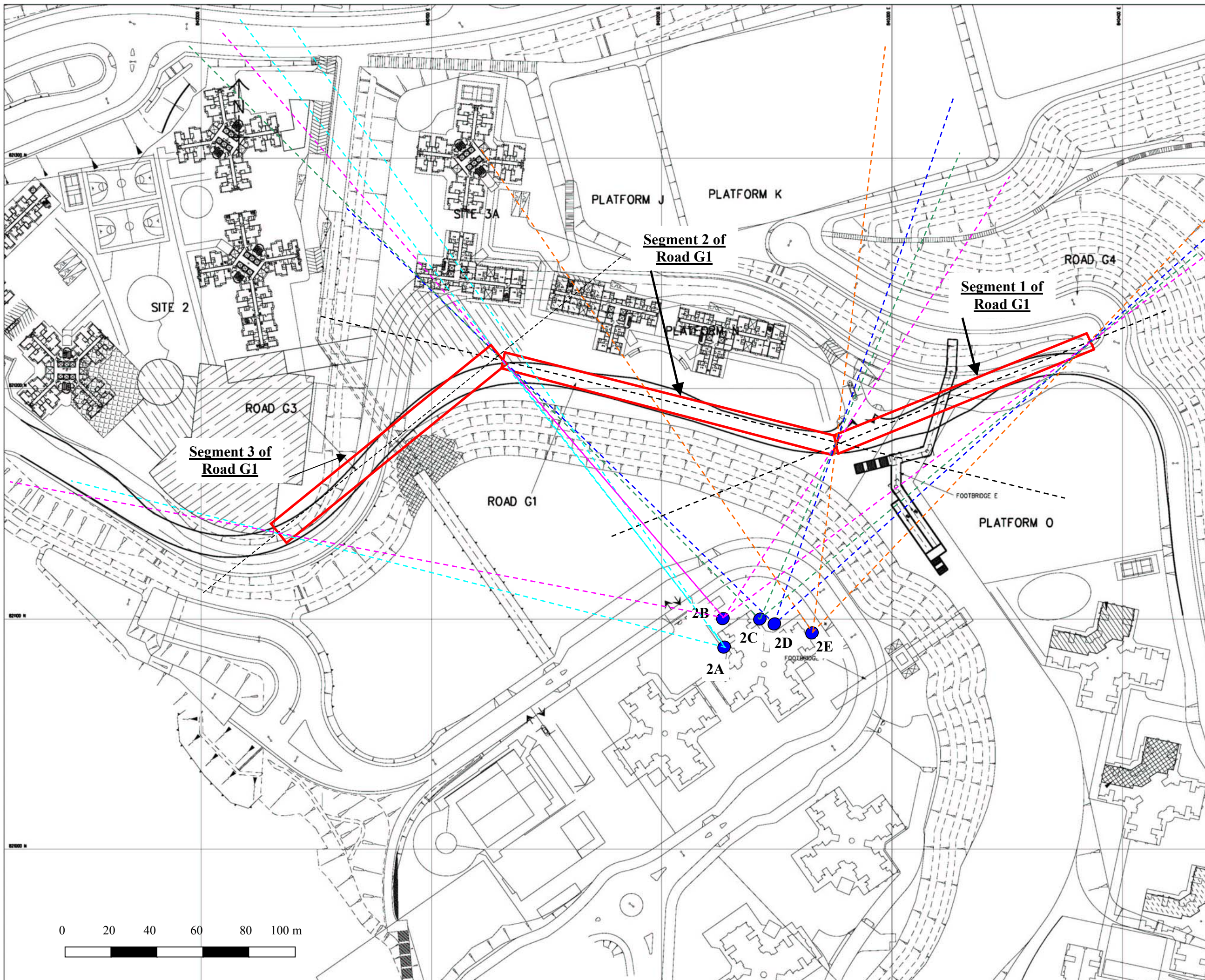


Figure 1: Original Layout Plan for the Developments at Choi Wan Road and Jordan Valley



- NOTES
1. DIMENSIONS ARE IN METRES UNLESS SHOWN OTHERWISE.
 2. COORDINATES ARE BASED ON THE HONG KONG METRIC GRID (1980).
 3. LEVELS REFER TO PRINCIPAL DATUM (P.D.) UNLESS SHOWN OTHERWISE.
 4. SKID RESISTANCE ROAD SURFACING WILL BE PROVIDED AT CURVES.

B 05/05 MINOR REVISION.	NYH	
A 05/05 ROAD ALIGNMENT REVISED.	NYH	
rev. date	description	drawn checked

REVISION			
designed	drawn	checked	scale
SY	NYH	CHW	1:750
approved		date	status
		4-2005	

contract no.
file no.
project no. 564CL
contract

DEVELOPMENT AT CHOI WAN ROAD AND JORDAN VALLEY

drawing title
REVISED ROAD G1 LAYOUT PLAN

drawing no.
98255/G1/SK012B

Scott Wilson Ltd
偉信顧問集團有限公司



office
KOWLOON DEVELOPMENT OFFICE

土木工程拓展署
CEDD Civil Engineering and Development Department

Figure 2: Revised Layout Plan for the Developments at Choi Wan Road and Jordan Valley and Affect NSRs Associated with the Realignment of Road G1

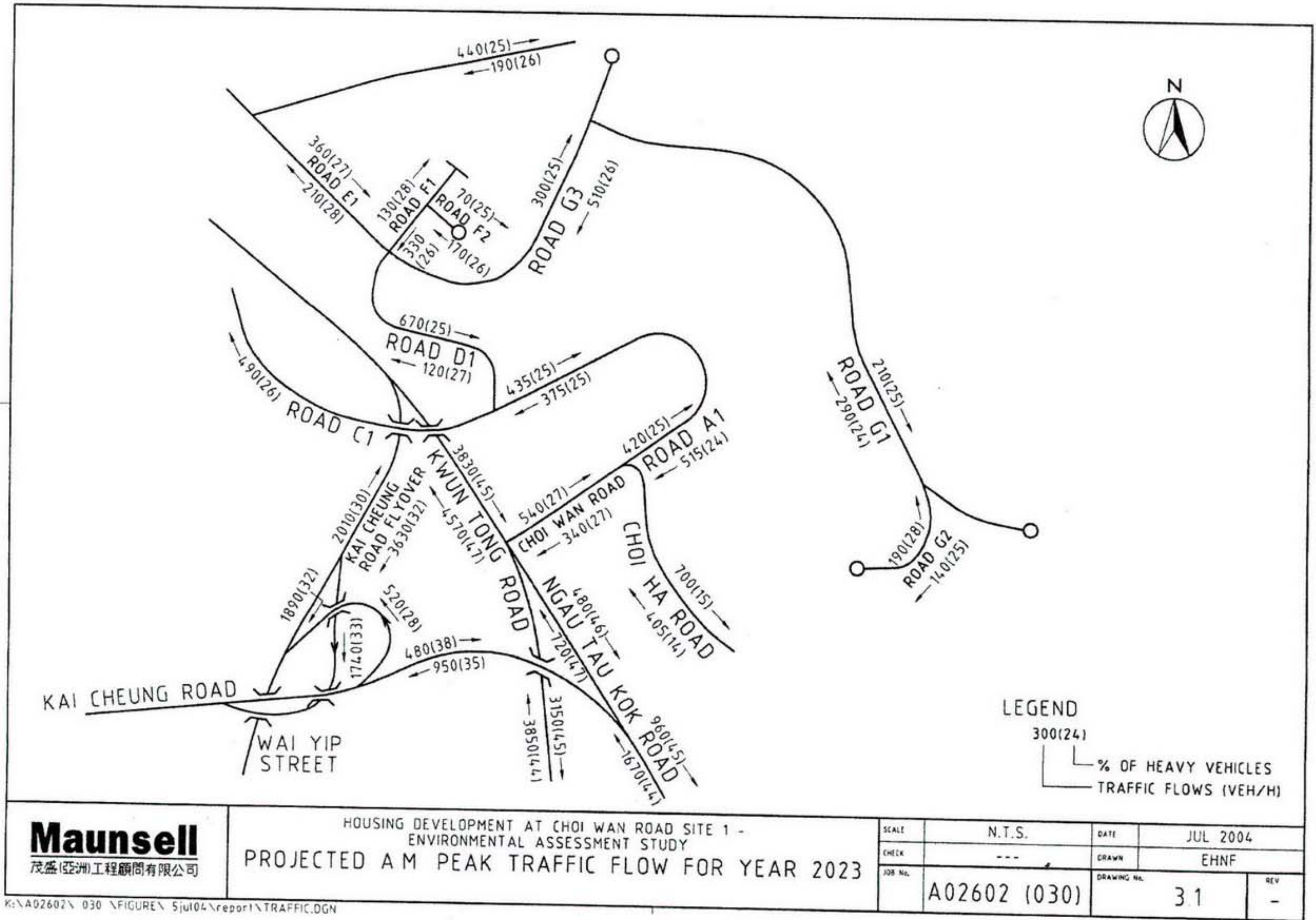


Figure 3: Traffic Flow Diagram for Developments at Choi Wan Road and Jordan Valley Based on Latest Scheme

