

Calculation of Transient Population

This section presents the calculation of traffic population along with the traffic population growth and transient distribution for the population.

Calculation of Traffic Population Growth

The traffic population growth of 2.6% is calculated using the average annual growth of Ting Kok Road (Station Number 6211) from the Hong Kong Traffic Census 2015-2020 data. The summary of the data used is presented in Table 8.2.1.

Table 8.2.1 Traffic Population Growth

Year	Vehicle/ day	AADT Annual Change (%)
2015	25240	-
2016	27230	7.9
2017	27110	-0.4
2018	29580	9.1
2019	28260	-3.2
2020	28530	-0.3
Average Annual Growth (%)		2.6

The projected traffic population used in the assessment is shown in Table 8.2.2.

Table 8.2.2 Projected Traffic Population

Year	Vehicle/ day
2020	28530
2025	32435
2030	36875
2036	43018

Calculation of Traffic Variation within the Day

The traffic variation within the day for traffic population is calculated to be 69% during the day time. This number is derived from the Hong Kong Traffic Census data using formula listed below,

$$\text{Traffic \% during Day} = \frac{\text{East Bound (AADT * R12/24\%)} + \text{West Bound (AADT * R12/24\%)}}{\text{East Bound AADT} + \text{West Bound AADT}}$$

Estimation of Average Occupancy per Vehicle

The average occupancy adopted in the study is derived from Ting Kok Road (Station Number 6211) using 16 hours' time data. The data used to calculate the number is provided in the table below,

Table 8.2.3 Vehicle Occupancy Data

	Class of Vehicle									
	Motor Cycle	Private Car	Taxi	Private LB	PLB	Goods veh.		Non Fr. Bus	Fr. Bus	
						Light	M&H		SD	DD
Pro (%)	2.6	62.5	11.2	0.9	5.1	10.8	3.4	2.6	0	0.9
Ocp	1.1	1.5	1.9	2.8	10.6	1.5	1.1	8.5	0	27.4
Pro x Ocp	0.03	0.94	0.21	0.03	0.54	0.16	0.04	0.22	0	0.25

Note:

Pro: Probability

Ocp: Occupancy

The estimated average occupancy is found to be around 2.41 people per vehicle.

Estimation of Transient Population

The transient population used in the study is presented in Table 8.2.4.

Table 8.2.4 Transient Population

Road	Average occupancy (people/veh)	Speed (km/hr)	Study Distance (km)	Total Traffic Population, i.e. Day+Night (People)			Day Time						Night Time					
							Traffic Flow * (veh/hr)			Traffic Population (people)			Traffic Flow * (veh/hr)			Traffic Population (people)		
				2025	2030	2036	2025	2030	2036	2025	2030	2036	2025	2030	2036	2025	2030	2036
Ting Kok Road	2.41	50	1.76	229	259	303	1865	2120	2473	158	179	209	837	952	1111	71	80	94
Yuen Shin Road	2.41	50	0.79	103	117	136	1865	2120	2473	71	81	94	837	952	1111	32	36	42
Dai Fuk Road	2.41	50	0.20	7	8	14	527	681	1027	5	6	10	236	306	461	2	2	4
Dai Wah Road	2.41	50	0.66	5	8	12	146	190	286	4	6	8	65	85	128	1	2	4
Dai Fat Road	2.41	50	1.09	63	81	123	837	1082	1632	44	56	85	376	486	733	19	25	38
Dai Shing Road	2.41	50	0.67	24	32	48	536	693	1045	17	22	33	241	311	469	7	10	15
Dai Cheong Road	2.41	50	0.72	35	46	69	715	924	1394	24	32	48	321	415	626	11	14	21
Dai Wang Road	2.41	50	0.38	6	8	13	293	379	571	5	6	10	131	170	257	1	2	3
Dai Fu Road	2.41	50	0.80	33	43	65	602	778	1173	23	30	45	270	349	527	10	13	20
Dai Kwai Road	2.41	50	1.14	56	74	111	724	936	1412	39	51	77	325	420	634	17	23	34

Road	Average occupancy (people/veh)	Speed (km/hr)	Study Distance (km)	Total Traffic Population, i.e. Day+Night (People)			Day Time						Night Time					
							Traffic Flow * (veh/hr)			Traffic Population (people)			Traffic Flow * (veh/hr)			Traffic Population (people)		
				2025	2030	2036	2025	2030	2036	2025	2030	2036	2025	2030	2036	2025	2030	2036
Dai Hei Road	2.41	50	0.59	8	12	19	248	320	484	6	8	13	112	144	217	2	4	6
Dai King Road	2.41	50	0.41	5	6	10	203	263	396	4	5	7	91	118	178	1	1	3
Dai Shun Road	2.41	50	0.46	18	24	37	602	778	1173	13	17	26	270	349	527	5	7	11

* Traffic flow for Ting Kok Road and Yuen Shin Road was estimated from Annual Average Daily Traffic (AADT) for road traffic data acquired from the latest Annual Traffic Census (ATC) [8]. For the remaining roads with no information from the ATC, the road traffic data was estimated based on-site survey.