where
E = particulate emission factor (gkm^{-1})
k = base emission factor for particle size range (where k = 4.6 for PM_{10})
sL = road surface silt loading (gm^{-2})
W = average weight (tons) of vehicles travelling the road

5.2.5 To obtain representative average weight (W) for vehicles travelling, a vkt-weighted average weight was calculated for each scenario ie

$$\textit{Average Vehicle Weight (W) for Scenario X} = \Sigma (\textit{Weight}_{\textit{vehicle type}} \times \textit{vkt}_{\textit{vehicle type}}) / \Sigma (\textit{vkt}_{\textit{vehicle type}})$$

5.2.6 A paved road dust (prd) emission factor (E) was estimated for each scenario. This factor is used to calculate the prd in each district from road transport. The paved road dust emissions calculated by this method represents the overall prd emissions and cannot estimate the contribution by each vehicle type.

5.2.7 The emissions of NO_x, VOC, RSP (tailpipe and prd) for each of the 18 districts (approximate to HKSAR District Boards boundaries as shown in Figure 5.2a) under different transport scenarios generated by the main transport model were compared against the corresponding emissions for the base year (1997) to assess whether there is a net benefit or a negative impact.

5.2.8 In order to compare the relative merits of each scenario for analysis by the main traffic study, a composite measure of the changes to the total inventories (ie sum of emissions from 18 districts) of NO_x, VOC, RSP (tailpipe and prd) relative to the base year is used as shown in Table 5.2b.

Table 5.2b
Composite Air Score (Sample Calculations)

Base Year = X tons NO_x, Y tons VOC, Z tons RSP (tailpipe + prd)
Scenario A = 1.2X tons NO_x, 1.2Y tons VOC, 0.8Z tons RSP (tailpipe + prd) Composite Air Score = (1.2 + 1.2 + 0.8)/3 = 1.07
Scenario B = 0.8X tons NO_x, 1.4Y tons VOC, 0.6Z tons RSP (tailpipe + prd) Composite Air Score = (0.8 + 1.4 + 0.6)/3 = 0.93

5.2.9 Based on the above example, the 1997 inventory would receive an air score of 1 and Scenarios A and B would receive air scores of 1.07 and 0.93 respectively. Hence, it could reasonably be assumed that Scenario B would create a general improvement in air quality relative to 1997 levels (as indicated in Section 3), whereas Scenario A would result in further deterioration. A summary of the total pollutant emissions and the composite air scores is discussed in Table 5.2h.

5.2.10 In employing this approach, no attempt has been made to weigh the relative health impacts of the three indicator pollutants. This factor is accounted for in the analysis