due to emissions from the road network, and the vent shaft emissions were adjusted by these global traffic factors to produce the 24-hour average concentration. With reference to the traffic count data from the Traffic Census, the traffic profiles for urban areas are relatively flat during the daytime hours. A large proportion of the daily traffic flow is within the daytime hours. The application of a flat traffic profile for the calculation of 24-hour average concentrations in this assessment is considered a reasonable approach.

2.3.3.29 For the calculation of 24-hour average concentration, instead of assuming a worst-case wind direction for the entire 24-hour period, concentration for each hour of a day was calculated based on the historical wind data recorded at Kai Tak Runway for year 1997. For recorded wind speed of less than 2m/s, a wind speed of 1m/s was taken in the dispersion models. For recorded wind speed at or above 2m/s, a wind speed of 2m/s was taken in the dispersion models to produce conservative predictions. The worst-case 24-hour average concentration was then taken as the highest daily value within the year.

2.3.3.30 Ozone Limiting Method was used in the calculation of the 24-hour average NO_2 concentrations. It should be noted that this is a conservative approach and was taken in this assessment as a screening exercise. The reason is that the calculated worst-case 24-hour average NO_2 and RSP concentrations assumed worst-case meteorological conditions, i.e. stable atmospheric conditions and low wind speed for the entire 24-hour period.

2.3.3.31 Cumulative impacts were calculated by adding the predicted concentrations from:

- CALINE4 modelling results of open roads traffic emissions (NOx and RSP);
- ISCST3 modelling results of vent shaft emissions (NOx and RSP); and
- ISCST3 modelling results of industrial chimney emissions (SO_2, NOx, and RSP).

2.3.3.32 After all, background NO_2, RSP, and SO_2 concentrations of 59μgm^{-3}, 60μgm^{-3} ,and 21μgm^{-3} respectively were added to the results calculated above to produce the worst-case concentrations. These background concentrations were derived from the EPD monitoring data for urban area.

2.3.3.33 More details on the operational phase air quality modeling are included in **Appendix 2B**.

2.4 Identification, Prediction and Evaluation of Potential Impacts

2.4.1 *Construction Phase Impact Assessment*

Construction Dust Impact

2.4.1.1 The modeling results for the mitigated and unmitigated scenarios are presented in **Table 2.10**. For the mitigated scenario, 50% dust reduction by twice daily watering with complete coverage was assumed for the entire active construction area. For areas within 200m from nearby sensitive receivers, 75% dust reduction by the implementation of watering every 1.5 hours was assumed. The predicted worst-case TSP concentrations for the unmitigated and mitigated scenarios are also presented in the form of concentration contours as shown in **Drawing Nos. 22936/EN/389 to 392**. The TSP concentration contours are presented at the height of 1.5m above ground. 1.5m is the average height of human breathing zone.

Table 2.10 Predicted Worst-case 1-hour Average and 24-hour Average TSP Concentrations for Unmitigated and Mitigated Scenarios

ASR	Unmitigated Scenario		Mitigated Scenario	
	Worst-case 1-hour Average TSP (μgm^{-3})	Worst-case 24-hour Average TSP(μgm^{-3})	Worst-case 1-hour Average TSP (μgm^{-3})	Worst-case 24-hour Average TSP (μgm^{-3})
1	467.4	259.7	251.2	171.8
2	487.4	**267.9**	280.7	188.0

ASR	**Unmitigated Scenario**		**Mitigated Scenario**	
	Worst-case 1-hour Average TSP (µgm^{-3})	**Worst-case 24-hour Average TSP(µgm^{-3})**	**Worst-case 1-hour Average TSP (µgm^{-3})**	**Worst-case 24-hour Average TSP (µgm^{-3})**
3	157.4	124.2	193.2	144.5
4	108.9	102.8	170.0	133.7
5	**595.6**	**315.6**	293.2	192.6
6	482.8	**267.5**	255.2	175.6
7	493.6	**272.4**	264.4	179.8
8	454.0	254.7	263.0	179.7
9	498.8	**274.4**	281.3	187.8
10	368.3	217.1	229.4	162.5
11	165.2	128.0	219.7	156.9
12	365.0	215.9	248.4	173.9
13	388.0	226.5	235.1	165.3
14	455.1	256.0	249.9	172.2
15	403.0	233.3	230.3	162.8
16	456.1	257.2	237.5	166.1
17	450.7	254.9	234.8	165.0
18	484.5	**268.5**	242.3	167.6
19	420.6	241.5	221.6	158.6
20	453.6	255.8	230.7	163.0
21	429.7	244.7	228.0	161.2
22	279.6	179.2	176.7	136.5
23	224.5	154.2	201.1	148.6
24	188.9	138.3	199.6	148.1
25	159.7	125.6	145.4	121.5
26	359.7	213.7	204.1	149.9
27	368.3	217.6	202.4	149.1
28	369.3	218.1	201.7	148.7
29	450.4	253.9	221.3	158.4
30	335.7	203.5	189.9	142.7
31	174.1	132.3	133.3	115.6
32	189.4	139.0	140.3	119.0
33	447.6	252.4	236.5	165.8
34	403.2	233.2	210.8	153.0
35	468.6	**262.4**	213.3	156.0
36	394.8	229.9	204.1	150.5
37	419.3	240.0	208.2	152.2
38	**502.3**	**277.8**	230.8	164.7
39	328.3	199.8	168.9	133.4
40	**662.6**	**347.0**	255.6	177.4
41	214.5	151.0	139.6	119.8

Note: Modeling results that exceeded the guideline level or AQO are shown in bolded characters.

2.4.1.2 As shown by the modeling results, without any dust suppression measures, exceedance of the TSP 1-hour average guideline level of 500 µgm^{-3} and the 24-hour average AOQ of 260 µgm^{-3} would be expected at some of the sensitive receivers around the SEKD. Elevated TSP dust would also be expected at most of the sensitive receivers.

2.4.1.3 With the implementation of dust suppression measures, exceedance of the TSP guideline level and AQO would not be expected. The modeling results showed that the worst-case dust impacts at the sensitive receivers are generally reduced by about 50%.

2.4.1.4 With the implementation of proper dust control and suppression measures stipulated in the *Air Pollution Control (Construction Dust) Regulation* and described in Section 2.5 below, adverse dust impact from the construction activities of the proposed development is not expected.

Odour Impact from Reclamation Activities

2.4.1.5 The water quality in the Kai Tak Approach Channel (KTAC), Kwun Tong Typhoon Shelter (KTTS) and Hoi Sham has been heavily polluted by sewage discharges and discharges from polluting industries in the past. A large amount of sediments has been deposited on the bottom of these areas. These sediments contain high concentrations of organic matter and heavy metals. The sediments in these areas would either be left in place or dredged away when carrying out the reclamation.

2.4.1.6 Site investigation was carried out as part of this study to determine the sediment chemical quality in KTAC, KTTS and Hoi Sham area. Sediment samples were collected and analysed for the total sulphide content and acid volatile sulphide (AVS) to determine the likelihood of hydrogen sulphide gas emission. Details of the site investigation and sediment analysis results are presented in Sections 5.4.3 and 5.5.1 of this report respectively.

2.4.1.7 Section 5.5.3 of this report discussed the different reclamation options and the associated environmental impacts. To summarise, three options namely no dredged reclamation, fully dredged reclamation and minimum dredged reclamation have been considered for implementation of the South East Kowloon reclamation. For all the three options, with the effective implementation of the odour mitigation measures discussed below, emission of odour from the reclamation activities is not anticipated.

2.4.1.8 For no dredged option with *in-situ* treatment, no sediment dredging would be required. The potential contamination from sediment resuspension and release of contaminants, which are bound to the sediment particles, can be minimized. Spills and losses of the contaminated sediments can also be avoided because no sediment handling would be required. Odour emission is not likely to be an important issue in this case.

2.4.1.9 For the fully dredged or minimum dredged option with *ex-situ* treatment, suction dredging would be used for sediment dredging. The dredging operation is under a submerged condition and would prevent the exposure of dredged sediments in the atmosphere. Odour emission would be minimized by the addition of Fenton's reagent; a chemical reagent composes of hydrogen peroxide and Fe^{2+} that can degrade the contaminants in sediment. The reagent would be added into the dredged sediments in the dredge pipeline, which would oxidize much of the AVS almost instantaneously and hence reduce the generation potential of odorous hydrogen sulphide gas. As high concentrations of AVS tend to generate odorous hydrogen sulphide gas, the reduction in AVS would minimize the odour problem during the operation. Besides, any *ex-situ* treatment facilities and the associated stockpiles, if required, should be fully enclosed to avoid any odour nuisance. It is therefore unlikely that odour emission would be a critical issue when applying the proposed dredging and treatment methods.

2.4.1.10 After the completion of dredging and reclamation, the odour problem in the reclamation areas would be eliminated. Part of the existing KTTS will be reclaimed in the later stage of the development project. The water quality in the remaining part of KTTS would be improved as the major sources of pollution from the Kai Tak Nullah and other box culverts would be diverted to Kowloon Bay and would not enter the KTAC and KTTS. Deterioration of water quality in the typhoon shelter is unlikely if there is no illegal discharge of effluent into the water by the boat users. When a normal flushing rate is maintained in the typhoon shelter, the potential odour problem from the typhoon shelter that may affect the future sensitive receivers in the KTAC would not be likely.

2.4.2 *Operational Phase Impact Assessment*

Traffic and Industrial Air Quality Impact

2.4.2.1 Predicted worst-case 1-hour average NO_2 and SO_2 concentrations and worst-case 24-hour average NO_2, RSP, and SO_2 concentrations at the selected air quality assessment points at different assessment heights are detailed in **Appendix 2A** of this report. All the modelling results included the background concentration. The highest predicted concentrations within each development area are highlighted in the appendix for easy reference.

2.4.2.2 The predicted worst-case pollutant concentrations are also presented in the form of concentration contours covering the entire SEKD and its surrounding areas. Pollutant concentration contours are presented at the worst affected heights for different pollutants. For NO_2, concentration contours are presented at all assessment heights namely 1.5m, 10m, 25m, 50m, 75m, and 100m above ground. For RSP, concentration contours are presented at the worst affected height of 1.5m above ground. For SO_2, concentration contours are presented at the upper assessment heights namely 25m, 50m, 75m, and 100m above ground. Details of the drawing reference are listed in **Table 2.11** below.

2.4.2.3 It should be noted that the pollution contours were produced by interpolation based on the predicted concentration at regular grid points. Whereas the results presented for the selected ASRs and Assessment Points (**Tables 2.12 to 2.15**) are at the specific locations of the ASRs or Assessment Points. Minor discrepancies would be expected between the two and are generally acceptable. For potential impacts at selected ASRs and Assessment Points, the numbers presented in this report are considered more relevant. The purpose of the pollution contours is to give an overall view of the potential impacts to the readers in graphic forms that are more reader friendly.

Table 2.11 Drawing Reference of Air Pollutant Concentration Contours

Drawing No.	Air Pollutant	Averaging Period	Height Above Ground
22936/EN/316A-F	NO_2	1-hr	1.5m
22936/EN/317A-F	NO_2	1-hr	10m
22936/EN/318A-F	NO_2	1-hr	25m
22936/EN/319A-F	NO_2	1-hr	50m
22936/EN/320A-F	NO_2	1-hr	75m
22936/EN/321A-F	NO_2	1-hr	100m
22936/EN/322A-F	NO_2	24-hr	1.5m
22936/EN/323A-F	NO_2	24-hr	10m
22936/EN/324A-F	NO_2	24-hr	25m
22936/EN/325A-F	NO_2	24-hr	50m
22936/EN/326A-F	NO_2	24-hr	75m
22936/EN/327A-F	NO_2	24-hr	100m
22936/EN/328A-F	RSP	24-hr	1.5m
22936/EN/329A-F	SO_2	1-hr	25m
22936/EN/330A-F	SO_2	1-hr	50m
22936/EN/331A-F	SO_2	1-hr	75m
22936/EN/332A-F	SO_2	1-hr	100m
22936/EN/333A-F	SO_2	24-hr	25m
22936/EN/334A-F	SO_2	24-hr	50m
22936/EN/335A-F	SO_2	24-hr	75m
22936/EN/336A-F	SO_2	24-hr	100m

2.4.2.4 The highest predicted concentrations within the three major areas namely NAKTA, Hoi Sham, and Runway areas of SEKD are listed in **Tables 2.12 to 2.14** respectively. The highest predicted concentrations at the selected existing and planned developments around SEKD are listed in **Table 2.15**. The worst impacted assessment points and assessment height are also presented in the tables.

Table 2.12 Predicted Worst-case Air Quality Impacts at NAKTA Area

Parameter	AQO	Area	Assessment Point	Height	Predicted Concentration	% AQO
1-hr average NO$_2$ (mgm^{-3})	300	1L	8128	25m	251.2	83.7%
24-hr average NO$_2$ (mgm^{-3})	150	1N	8136	40m	149.8	99.8%
24-hr average RSP (mgm^{-3})	180	1N	8136	40m	132.9	73.8%
1-hr average SO$_2$ (mgm^{-3})	800	2G	8225	40m	247.8	31.0%
24-hr average SO$_2$ (mgm^{-3})	350	2E	8200	50m	50.7	14.5%

Table 2.13 Predicted Worst-case Air Quality Impacts at Hoi Sham Area

Parameter	AQO	Area	Assessment Point	Height	Predicted Concentration	% AQO
1-hr average NO$_2$ (mgm^{-3})	300	3A	9008	75m	201.7	67.2%
24-hr average NO$_2$ (mgm^{-3})	150	3T	9157	1.5m	130.6	87.1%
24-hr average RSP (mgm^{-3})	180	3T	9153	1.5m	122.6	68.1%
1-hr average SO$_2$ (mgm^{-3})	800	3V	9159	50m	669.1	83.6%
24-hr average SO$_2$ (mgm^{-3})	350	3V	9158	25m	99.0	28.3%

Table 2.14 Predicted Worst-case Air Quality Impacts at Runway Area

Parameter	AQO	Area	Assessment Point	Height	Predicted Concentration	% AQO
1-hr average NO$_2$ (mgm^{-3})	300	4A	7004	75m	305.5	101.8%
24-hr average NO$_2$ (mgm^{-3})	150	4K	7097	25m	148.7	99.2%
24-hr average RSP (mgm^{-3})	180	4N	7133	40m	133.6	74.2%
1-hr average SO$_2$ (mgm^{-3})	800	5L	7240	40m	908.6	113.6%
24-hr average SO$_2$ (mgm^{-3})	350	5L	7240	25m	161.0	46.0%

Table 2.15 Predicted Worst-case Air Quality Impacts at Selected Existing and Planned Development

Parameter	AQO	ASR	Height	Predicted Concentration	% AQO
1-hr average NO$_2$ (mgm^{-3})	300	35	1.5m	246.6	82.2%
24-hr average NO$_2$ (mgm^{-3})	150	13	1.5m	149.3	99.6%
24-hr average RSP (mgm^{-3})	180	14	1.5m	132.4	73.5%
1-hr average SO$_2$ (mgm^{-3})	800	8	75m	966.8	120.8%
24-hr average SO$_2$ (mgm^{-3})	350	8	50m	200.1	57.2%

NAKTA Area

2.4.2.5 For NAKTA area, as shown in **Table 2.12**, worst-case impact of 1-hour average nitrogen dioxide level is predicted at Area 1L (at 25m above ground) due to cumulative impacts of traffic emissions from both open roads, and the ventilation shaft emissions from D5 tunnel, Airport Tunnel, and the CKR tunnel. Worst-case impacts of 24-hour average nitrogen dioxide and RSP level are both predicted at Area 1N at 40m above ground due the cumulative impacts of ventilation shaft emissions from Airport Tunnel and CKR tunnel. The predicted sulphur dioxide levels over the NAKTA area are relatively low in general.

Hoi Sham Area

2.4.2.6 For Hoi Sham area, as shown in **Table 2.13**, worst-case impact of 1-hour average nitrogen dioxide level is predicted at Area 3A (at 75m above ground) mainly due to the emissions from the East Vent Building of the CKR tunnel. Worst-case impacts of 24-hour average nitrogen dioxide and RSP level are both predicted at Area 3T at 1.5m above ground mainly due to traffic emissions from Road D1. The predicted sulphur dioxide levels over the Hoi Sham area are relatively higher.

2.4.2.7 Worst-case impacts of sulphur dioxide are predicted at Area 3V. The worst affected heights are predicted at 25m to 75m above ground (see **Drawing Nos. 22936/EN/329C, 330C & 331C**). Major sources of impact on this area are the chimney emissions from the Ma Tau Kok Gas Works located immediately to the west. The exhaust heights of the chimneys range from about 20m to 50m above ground.

2.4.2.8 With reference to the concentration contours, exceedance of the AQO for sulphur dioxide is only predicted at westernmost boundary of Area 3V. In order to avoid adverse air quality impacts due to potential plume impingement, an environmental setback of 60m has been allowed in the current layout plan between the boundary of Area 3 and the westernmost residential block in Area 3V. Notwithstanding this, it is indicated in a recent planning application at Area 3V that Hong Kong and China Gas Company Ltd will be committed to replace two existing diesel compressors by two high tension electric motor driven compressors and an additional high tension motor will be kept for emergency purpose such that the potential plume impingement from Ma Tau Kok Gas Works will not cause unacceptable air quality impact at Area 3V.

Runway Area

2.4.2.9 For the Runway area, as shown in **Table 2.14**, worst-case impact of 1-hour average nitrogen dioxide level is predicted at Area 4A (at 75m above ground) mainly due to the emissions from the East Vent Building of the CKR tunnel. The predicted concentration at Assessment Point 7004 exceeded the 1-hour average AQO of 300 μgm^{-3} for nitrogen dioxide. In order to avoid adverse air quality impacts, an environmental setback of 230m from the centre of the CKR East Vent Building has been allowed in Area 4A in the current layout plan. The requirement of this mitigation measure is based on conservative estimate of the impact discussed in Section 2.3.3.11.

2.4.2.10 Worst-case impact of 24-hour average nitrogen dioxide level is predicted at Area 4K at 25m above ground mainly due to emissions from the vent shaft of the D4 tunnel. The worst-case impact of 24-hour average RSP level is predicted at Area 4N at 40m above ground mainly due to emissions from the northern vent shaft of T2 tunnel. In order to avoid direct plume impingement of the vent shaft emissions onto the schools planned in Area 4N, the exhaust height of vent shaft has been increased to 24m above ground in the current layout plan. The requirement of this mitigation measure is based on conservative estimate of the impact discussed in Section 2.3.3.11.

2.4.2.11 Worst-case impacts of sulphur dioxide are predicted at Area 5L at 25m to 40m above ground at Assessment Point 7240. The major source of impact is the chimney emissions assumed for the hospital planned in Area 5L located near to Assessment Point 7240. The modelling results showed no exceedance of the AQO at the Assessment Points adjacent to the hospital site. During the detailed design stage of the hospital in Area 5L, air quality assessment should be carried out for any potential chimney emissions within the hospital site such that there would not be unacceptable air quality impacts on the surrounding sensitive receivers.

Existing and Planned Development Around SEKD

2.4.2.12 As shown in **Table 2.15**, existing and planned air sensitive receivers with the highest predicted levels of 1-hour average and 24-hour average nitrogen dioxide concentrations and 24-hour average RSP concentration are all located very close to existing trunk roads namely Kwun Tong Bypass and Prince Edward Road East. All the highest concentrations are predicted close to the road level.

2.4.2.13 Worst-case impacts of sulphur dioxide are predicted at ASR 8. The worst affected heights are predicted at 50m and 75m above ground (see **Drawing Nos. 22936/EN/331C & 334C**). Major sources of impact on this area are the chimney emissions from the Ma Tau Kok Gas

Works located immediately to the northeast. The exhaust heights of the chimneys range from about 20m to 50m above ground.

2.4.2.14 One exceedance of the 1-hour average AQO for SO_2 was predicted at existing ASR 8 at 75m height mainly due to the stack emissions from Ma Tau Kok Gas Works and not the potential emissions from the future SEKD. The existing use of ASR 8 is an industrial building of about 40m high. Therefore, exceedance of the AQO would not be expected at the existing building. However, ASR 8 is also a proposed residential development. Should there be no change in the emission condition from the nearby Ma Tau Kok Gas Works, a height restriction may be imposed on the proposed development at ASR 8 to avoid potential air quality due to potential plume impingement.

Traffic Air Quality Impacts Within Vehicle Tunnel and Full Noise Enclosure

2.4.2.15 Air within a vehicle tunnel or full noise enclosure would be contaminated by tailpipe emissions from the vehicles travelling in it. During detailed design stage of the vehicle tunnel and full noise enclosure, the ventilation system should be designed to comply with the tunnel air quality limits stipulated in EPD's *Practice Note on Control of Air Pollution in Vehicle Tunnels* (see Table 2.2) by means of mechanical or natural ventilation or other control measures.

Odour Impact from Maintenance of Drainage Channel

2.4.2.16 The maintenance of large culverts within SEKD mainly includes the desilting process followed by the handling and disposal of the collected sediments. Access points to the box culvert would be provided across the width of the culvert at maximum 200 metre spacing along the length of the culvert. The width of the culvert would be divided into cells that are up to 5 metres wide. To illustrate, a 90-m wide section of the culvert would have eighteen 5-m wide cells.

2.4.2.17 Maintenance would be carried out throughout the year and on a continuing basis. Taking the largest box culvert system i.e. worst case (lower Kai Tak Nullah extension) for illustration purposes. At the recommended regular desilting interval of three years, there would be on average approximately 96 m^3 of materials to be removed every three years based on a 5 m wide by 5 m high culvert for the longest winching distance of 181 m and an increase of sediment depth of about 0.035m per year. Based on a desilting rate of about $20m^3$ per day (for the winching process), five 8-hour winching shifts would be required to desilt that particular cell of the box culvert system. In total, the lower Kai Tak Nullah extension would accumulate 2,888 m^3 of sediment per year requiring approximately 45 working weeks per year (including mobilisation and demobilisation time and assuming a single crew) to desilt the culverts.

2.4.2.18 Two methods have been proposed for desilting the box culverts: the winching method and the man-entry method. The winching method has been recommended as the predominant method for routine maintenance. The man-entry method would be deployed infrequently, only when and where the winching method cannot be applied. Examples are during emergency events such as when shock loadings occur, or for sections around bends and junctions.

2.4.2.19 The cell under maintenance would first be isolated using stop logs. For the winching method, sediment is moved with a winch and plough to the downstream desilting opening from which it is removed via mechanical grab to trucks for transport to a Centralised Dewatering Facility. For the man-entry method, following isolation the water is pumped out sediment removed via bobcats/front loaders and skips lowered into the culvert through the desilting openings. Odour impact is expected during the maintenance operation described above.

Odour Impacts from Sewage Treatment Works

2.4.2.20 Regarding the potential odour impacts from the future extension of Kwun Tong Sewage Treatment Works, odour impact assessment was undertaken as part of the EIA for SSDS Stage I Studies. The result of the assessment indicated that less than 2 odour units would be detected at distances more than 30m away from the boundary of the STW under worst-case meteorological conditions. No sensitive receiver is planned within 30m from the boundary of the STW under the current design scheme. Adverse odour impact from the STW on the study area is therefore not expected.

2.4.2.21 Regarding the potential odour impacts from To Kwa Wan Preliminary Treatment Works, odour mitigation measures including covering or enclosure of major odour sources and the installation of ventilation and deodourisation equipment in the enclosed buildings are implemented. The PTW would be mitigated to prevent adverse odour impacts at existing nearby sensitive receivers including the APB Centre and the Bailey Garden, adverse odour impacts at sensitive receivers within SEKD that are further away is therefore not expected.

Odour Impact from Sewage Pumping Stations

2.4.2.22 Besides the maintenance of the drainage channel, potential odour impacts would also be expected from the operation of the sewage pumping stations proposed in the SEKD. The major odour sources would mainly be the wet wells and the distribution chambers.

Odour Impact from Open Section of the Kai Tak Nullah

2.4.2.23 For the construction of SEKD, reclamation will be carried out in Kowloon Bay, Kai Tak Approach Channel (KTAC), and Kwun Tong Typhoon Shelter (KTTS). The existing water quality conditions in KTAC and KTTS are poor due to low flushing rate. After the reclamation, KTAC will be reclaimed and Kai Tak Nullah will be mostly covered and diverted away from KTTS. The existing odour nuisance from KTAC and KTTS will be rectified.

2.4.2.24 However, there would still be two open sections of Kai Tak Nullah located near the eastern portal of the Airport Tunnel. In accordance with the current layout plan, only existing and future insensitive uses, including DSD maintenance depot, sewage pumping station, electric substation, International Trademart, HATCL building, and road interchange are planned in the immediate vicinity of the open sections. Odour impacts, if any, from these open sections would be sheltered by these insensitive uses.

2.4.2.25 In accordance with the recent water quality monitoring data by EPD near the proposed open sections of Kai Tak Nullah (sampling station KN1), the minimum monthly dissolved oxygen (DO) level increased from 0.4mg/l in 1996 to 0.7mg/l in 1997 to 1.0mg/l in 1998. The annual median DO level also increased from 2.4mg/l in 1996 to 2.7mg/l in 1997 to 4.5mg/l in 1998. With reference to the *Design Manual - Odor and Corrosion Control in Sanitary Sewerage Systems and Treatment Plants*, USEPA, the rate of hydrogen sulphide emissions from sewers depends on a number of factors including the concentration of DO in wastewater. With DO above 1.0 mg/l, sulphate reduction and hence hydrogen sulphide emissions from wastewater will be eliminated because of increased redox potential and inhibition of *Desulfovibrio*. The recent monitoring data therefore indicated an improvement in odour condition at the location of the proposed open sections.

2.4.2.26 The increase in DO level could be partly explained by the influence of secondary effluent discharged from the Sha Tin and Tai Po Sewage Treatment Works as part of the Tolo Harbour Effluent Export Scheme (THEES) commissioned in 1997. The THEES increased the effluent flow in Kai Tak Nullah by about 60%. This increase helped to dilute the effluent downstream and reduced the odour problems in the nullah. In view of the increasing trend of DO level as a result of the THEES and future control of expedient connections discharged to Kai Tak Nullah, odour impacts from the proposed open sections of Kai Tak Nullah is not anticipated.

2.4.2.27 Water quality modeling was undertaken in this study to assess the future water quality, including DO level, in the Kai Tak Nullah (see Sections 4.4.3.24 to 4.4.3.39 of this report). The modeling results indicated that a reasonable DO level could be maintained in the water of the box culvert. The results showed that decking of the box culvert would not cause a significant decrease in DO in the flowing water and would not generate unacceptable conditions in the box culvert.

Air Quality Impacts from the Proposed Refuse Transfer Station (RTS) and Public Filling Barging Point (PFBP)

2.4.2.28 Major potential air quality impacts during the operational phase of the proposed RTS in Area 6C will be odour arising from the handling of refuse and wastewater within the facility, and the fugitive odour emissions from the vehicles transporting refuse to the RTS.

2.4.2.29 Potential air quality impacts during the operational phase of the proposed PFBP in Area 6C will be dust arising from the handling and fill materials within the facility, and the potential dust entrainment due to vehicle traffic on the access road and within the PFBP.

2.4.2.30 The proposed RTS and PFBP are both located at more than 300m away from the planned sensitive uses of SEKD. Both facilities are located at about 100m from the Kwun Tong industrial area and at more than 300m away from the nearest existing residential uses namely Laguna City. With the implementation of practicable and effective dust and odour mitigation measures, adverse dust and odour impacts are not expected.

Air Quality Impacts from the Proposed Cruise Terminal

2.4.2.31 The cruise terminal is located in Area 6 at the tourist node of the SEKD. Adjacent uses are all commercial uses with centralised air conditioning and are not susceptible to potential air quality impacts from vessels emissions. The nearest residential sensitive receivers are located at more than 500m away from the cruise terminal. Adverse air quality impact due to emissions from vessels berthing at the cruise terminal is therefore not expected. This should be confirmed by a detailed air quality impact assessment to be carried out at the detailed design stage of the cruise terminal.

2.5 Mitigation of Adverse Impacts

2.5.1 *Construction Phase*

Construction Dust Impact

2.5.1.1 In order to ensure that dust emission is minimised during the construction phase of the project, relevant dust control requirements set out in the *Air Pollution Control (Construction Dust) Regulation* should be met. The site agent is required to adopt dust reduction measures while carrying out construction works. In particular, the mitigation measures listed below should be adopted where applicable. With the implementation of effective dust control measures, adverse dust impacts from the construction works of the project is not expected.

<u>Site clearance and demolition of existing structures</u>

- The working area for the uprooting of trees, shrubs, or vegetation or for the removal of boulders, poles, pillars or temporary or permanent structures should be sprayed with water or a dust suppression chemical immediately before, during and immediately after the operation so as to maintain the entire surface wet; and