Odour Emission Literature Review and Reconnaissance Site Survey

1. Desktop Review of Available Literature

Although odour from the Shenzhen River has been perceived as an air quality nuisance, there is no published data on quantifying or confirming the level of impact. The EIA Study Brief for the LMC Loop Development has not made specific reference to odour from the Shenzhen River as an air quality issue for the LMC Loop site. The most recent study is the ongoing study entitled 《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study 深圳河污染底泥治理策略合作研究》, which is jointly commissioned by 深圳市治理深圳河辦公室（深圳治河辦）and the HK EPD. The study recognizes that since the completion of Stage 2 of the Shenzhen River Regulation Project, an estimated amount of 3 million m^3 of sediment have been deposited onto the section of Shenzhen River between the Lowu Railway Bridge and the river mouth at Deep Bay. Accumulation of benthic sediment that is contaminated has created a secondary pollution source in Shenzhen River and inner Deep Bay. Occasional dispersion of odour has created nuisance to nearby areas. Odour dispersion becomes more serious especially during low tide when the river sediment is exposed above the water surface.

The purpose of the《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study 深圳河污染底泥治理策略合作研究》is to explore suitable treatment technologies and methods, so as to resolve the environmental problems created by the contaminated benthic sediment, and to provide feasible schemes for both governments of the Shenzhen and HKSAR to jointly implement sediment treatment works. The study area covers the Shenzhen River and Deep Bay including their catchment areas on both the Hong Kong and Shenzhen sides. The LMC Loop is within the catchment of the Shenzhen River on the Hong Kong side.

According to《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study – Proposed Work Plan for Contaminated Sediment Investigation 深圳河污染底泥治理策略合作研究: 底泥污染調查建議工作計劃》, 7 existing odour emission sources have been identified. Three of these in the vicinity of LMC Loop will be included in the odour impact assessment. The first one, identified as Location C, is at the upstream of the Shenzhen River and situated to the west of the Binhe Wastewater Treatment Plant. One, identified as Location D, is at the confluence of the Futian River and the Shenzhen River, which is characterized in the 《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study – Proposed Work Plan for Contaminated Sediment Investigation 深圳河污染底泥治理策略合作研究: 底泥污染調查建議工作計劃》as near the LMC Loop and is representative of odour impact on future planned development and odour impact from the tributary flow. Another identified point, Location E, is at the confluence of Huanggang River and Shenzhen River, which is characterized in the 《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study – Proposed Work Plan for Contaminated Sediment Investigation 深圳河污染底泥治理策略合作研究: 底泥污染調查建議工作計劃》as near the Huanggang BCP and is representative of odour impact to sensitive receivers by the river bank.

2. Reconnaissance Site Survey

Reconnaissance surveys of the LMC Loop site were undertaken on 11 and 16 January, and 16 March of 2010 to verify odour emission sources adjacent to the site. Survey of other potential odorous industries within 500m from Area A on Hong Kong side was also conducted on 23 April 2010.

On 11 January 2010, a reconnaissance site survey for odour sources was conducted along the New Boundary Patrol Road from the LMC Station Terminus to upstream of the Shenzhen River where it joins the northern section of the meander. Five sniffing points (OD-01 to OD-05) were made along the Shenzhen River (**Figure A**). Moderate odour was observed at OD-01 and OD-02, slight to moderate odour at OD-03 and OD-05, and slight odour at OD-04.

On 16 January 2010, a second reconnaissance survey with sniffing route starting from the southwest side of the LMC Loop (downstream of the Shenzhen River) along the Shenzhen River bank to the northeast side of the LMC Loop (upstream of the river) and then turning along the bank of the meander was conducted. Eleven sniffing points (OD-6 to OD-16) were made along the route (**Figure A**). Slight to moderate odour was observed at OD-06 (=OD-03 and OD-16) and OD-11 (=OD-05). No odour was observed at other sniffing points along the remaining sections of the Shenzhen River and along the banks of the meander.

On 16 March 2010, a third reconnaissance site survey was again conducted together with EPD, CEDD and PlanD. The route was along the northern bank of the LMC Loop adjacent to the Shenzhen River. It was found that the Shenzhen River was not particularly odorous at the time of the visit but it was noticed that the odour appeared stronger towards upstream of the Shenzhen River to the east. It was also apparent that the upstream polluting sources were contributing to the odour along the Shenzhen River.

The three surveys confirmed the significant contributions of two odour emission sources in the vicinity of the LMC Loop. The first one was at the drainage culvert to the immediate west of the LMC BCP to Huanggang BCP Bridge (i.e. Location E as in 《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study – Proposed Work Plan for Contaminated Sediment Investigation 深圳河污染底泥治理策略合作研究: 底泥污染調查建議工作計劃》); and the second odour source was at the confluence of the Futian River and Shenzhen River (i.e. Location D as in 《Shenzhen River Contaminated Sediment Remediation Strategy Joint Study – Proposed Work Plan for Contaminated Sediment Investigation 深圳河污染底泥治理策略合作研究: 底泥污染調查建議工作計劃》).

On 23 April 2010, another site survey was conducted to identify other generating industries within 500m from Area A on Hong Kong side, in which the planned ASRs will be located. One potential pig farm was located between Ping Hang and Tai Law Hau but it was found to be inactive. There were no other odour generating industries observed.

Observations from these reconnaissance site surveys have established 1) the river water and sediment quality of the Shenzhen River section between the two outfalls were significant odour sources (2) Binhe Wastewater Treatment Plant may be a distant odour source, subject to further investigation.

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On 23 April 2010, another site survey was conducted to identify other generating industries within 500m from Area A on Hong Kong side, in which the planned ASRs will be located. One potential pig farm was located between Ping Hang and Tai Law Hau but it was found to be inactive. There were no other odour generating industries observed.

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图例
LEGEND

OD-01 嗅探点 Sniffing Point

气味释放源 Odour Emission Source

位置二
Location 2

位置一
Location 1

OD-01
OD-2
OD-03,06,16
OD-04,10
OD-05,11
OD-07
OD-08
OD-09
OD-12
OD-13
OD-14
OD-15

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土木工程拓展署 CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT / 规划署 PLANNING DEPARTMENT	ARUP 奥雅纳工程顾问 Ove Arup & Partners Hong Kong Limited	研究项目 Job Title 合 约 编 号 Agreement No. CE 53/2008 (CE) 落马洲河套地区发展规划及工程研究 – 勘查研究 Planning and Engineering Study on Development of Lok Ma Chau Loop - Investigation	图则项目 Title 气味考察的嗅探点及气味释放源位置 Locations of Sniffing Points and Odour Emission Sources for the Odour Surveys	图则编号 Figure No. A 图例 Scale 1:7500 ON A3 修订编号 Rev. A