

Eia case study: a comparison of two eia reports

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EIA Case Study: A comparison of two EIA reports| 1. Environmental Impact Assessment Report of Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, Agreement No. CE 45/2008 (CE). 2. Environmental Impact Assessment Report of Shatin to Central Link- Mong Kok East to Hung Hom Section, Agreement No. NEX/2213| | | | | Contents 1. Introduction4 2. How are the Two Projects compared4 3. Description of the Case Studies5 3. 1 EIA Report 1: “ Shatin to Central Link-Mong Kok East to Hung Hom Section” 5 3. 1. 1 Project Background5 3. 1. 2 Construction Involved5 3. 1. 3 Projects call for the assessment of EIA05 3. 1. 4 Scope of the EIA study7 3. 1. 5 Conclusion of the EIA report after mitigation7 3. 2 EIA Report 2: “ Liantang Heung Yuen Wai Boundary Control Point and Associated Works” 7 3. 2. 1 Project Background7 3. 2. 2 Construction Involved7 3. 2. 3 Projects call for the assessment of EIA08 3. 2. 4 Scope of the EIA study9 3. 2. 5 Conclusion of the EIA report after mitigation9 4. Comparison of the Case studies9 4. 1 Noise Impact Assessment9 4. 1. 1 General Review of the project9 . 1. 2 Environmental Legislation, Standards and Guidelines10 4. 1. 3 Description of environment, NSRs. 11 4. 1. 4 The Main Parts of Noise Impact Assessment11 4. 2 Air Impact Assessment13 4. 2. 1 General Review of the project13 4. 2. 2 Procurement of relevant laws, regulations and pollutant emission standards14 4. 2. 3 Background air pollutants concentrations adopted in Projects15 4. 2. 4 Potential source of Impact and Assessment methodology16 4. 2. 5 Prediction Mitigation and Evaluation of Environmental Impact17 4. 3 Water Impact Assessment18 . 3. 1 General Review of the project18 4. 3. 2 Environmental Legislation, Standards and Guidelines18 4. 3. 3 Prediction and Evaluation of Impacts18 4. 3. 4 Water Quality Mitigation Measures19 5. What do the Case Studies Highlight from the Two EIA

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Introduction The EIA have long-term existing in Hong Kong. After the 1979, the EIA entered into the “ systematic application of an administrative system”.

An EIA Bill, which would have allowed EIA to become a statutory requirement, was approved by the Government in 1997. After that, the EIA continually developed rapidly in the next 15 years and became a fundamental and vital imperative part in every project as long as public and government would concern about. An EIA is a creative process addressing the diverse challenges of very different projects in often very different environments around the world. The objective of all the EIA is to control, contain, minimize, and even remove a development activity’s potential negative impacts on the environment.

This report selects two EIA reports which were approved in the recent two years to make a comparison on their different technical approaches, methods, and assessment results so that to review the current development of EIA discipline. How the two projects are compared will be introduced first. The main content with respect of comparison on noise impact assessment, air impact assessment and water impact assessment follows. Subsequently, the report would like to mention some valuable elements discovery during the comparison.

These messages will be organized in “ What do the case studies highlight from the two report part”. Finally, the report ends up in a conclusion and some implication for the future EIA. 2. How are the Two Projects compared In

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this Case Study paper, an introduction to the whole EIA procedures (includes the characteristic of the projects, the traits for EIA focus on and scope of different disciplines of assessment, the relevant mitigation methods, etc) will be first displayed based on a combination review of Executive brief, the introduction part of the two reports and relevant Figures.

The comprehensive comparison of the noise impact assessment, Air impact assessment, water impact assessment and other impact assessment between the two projects follows. All the above mentioned comparisons will be in accordance with the criteria demonstrate in the EIAO-TM. Subsequently, valuable points discovered during the comparison between the EIA procedures in the two projects are presented. These comprise the “What do the case studies highlight about the two EIA reports” phase. Finally, the conclusion on the case studies and some recommendations for the envisioned EIA report are provided.

The “Comparison of the case studies” is the main part of the case study report. A quick review on the courseware of CSE 508 environmental impact assessment will be prior to the commencement of the comparison. By doing this, a piece of general procedures for EIA studies which include a. Identity b. Description c. Procurement d. Condition of Prediction activities e. Assessment f. Mitigations, etc are formed to analyze the two reports, all the information provide in the EIA reports will be rearranged into the above categories for a more clear comparison, regardless of the original presentation form of each report.

Compare scenarios of construction phase and operation phase separately is also requisite in the report. Public participation is involved in both the two

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projects, the report also review them and comment on the different achievements public had made. Apart from this, having noticed the excellent contribution of 3-D model in the EIA, the report also introduces the effect of 3D EIA in the Liantang project. These two elements are of application value.

3. Description of the Case Studies

3. 1 EIA Report 1: “ Shatin to Central Link-Mong Kok East to Hung Hom Section”

3. 1. 1 Project Background

The project is known as SCL - Mong Kok East to Hung Hom Section [SCL (MKK-HUH)]. The realignment work for the existing EAL tracks from the tunnel portal near Oi Man Estate (portal 1A) to the proposed North Ventilation Building, Plant Rooms and Emergency Access (NOV) 1 in Hung Hom. It is approximately 1. 2km long from the tunnel portal near Oi Man Estate (portal 1A) to the proposed NOV in Hung Hom. The project area is land-based only with neither marine works nor use of sea-water cooling system. The primary construction phase elements displayed in Table 1 and 2 below.

3. 1. 2 Construction Involved

Sections| Key Construction Items| Portal 1A (the most northern part of the project boundary) to North of Hung Hom Station (HUH)| • Construction of a branch of track (with a trough and tunnel toward Chatham Road Interchange)• Construction Works Area above ground, e. g. Associated slope works at Oi Sen Path• Construction of Noise Mitigation Measures at Portal 1A• Realignment of Cheong Wan Road| North of HUH to Hung Hom NOV| • Construction of the approach tunnel• Construction of new platforms (at the existing HUH)• Construction of ventilation shafts at north and south of HUH• Construction works areas above ground, eg.

Cooling Tower• Operation of one barging point with two loading ramps at Hung Hom Freight Pier (It will be constructed by Kwun Tong Line Extension (KTE) before commencement of the construction of the Project| Table 1 Construction Phase Elements 3. 1. 3 Projects call for the assessment of EIAO The Project together with some associated works would cover three designated project (DP) elements as specified under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) as identified below: Item DP1: A railway and its associated stations under A. in Schedule 2 Part 1, i. e. Railway from Portal 1A to the new NOV and the HUH; Item DP2: A railway tunnel more than 800m in length between portals under A. 7 in Schedule 2 Part 1, i. e. from Chatham Road Interchange to the new NOV; and Item DP3: A road which is an expressway, trunk road, primary distributor road or district distributor road including new roads, and major extensions or improvements to existing road under A. 1 in Schedule 2 Part 1, i. e. Realignment of existing Cheong Wan Road which is a district distributor. the shifted alignment is shown in Appendix 1. 3) Apart from the above DP Elements, the following minor modification works would be conducted at the nearby siding and good cards which are currently designated project exempted under Section 9(2) of the EIAO: A railway siding, depot, maintenance workshop, marshalling yard or goods yard under A. 4 in Schedule 2 Part 1; i. e. Ho Man Tin siding. Based on the latest information, there will be neither change in frequency nor function of the sidings.

Three existing tracks will be reduced to one track with a spur track approaching the Hong Kong Polytechnic University Phase 8 (HKPU Phase 8) area and the number of crossing will be reduced (see Appendix 1. 4). A

railway siding, depot, maintenance workshop, marshalling yard or goods yard under A. 4 in Schedule 2 Part 1; Mong Kok Freight Terminal at MKK. Based on the latest information, there will be no change in function of the terminal. MKK will be slightly modified for additional work area of buildings and facilities of the existing terminal. There will be neither modification nor addition to the existing three rail tracks (see Appendix 1.).

Section| Key Operational Items - Before Yr 2020 (Using existing East Rail Line tracks and station) | Key Operational Items - After Yr 2020 (after the completion of the whole SCL) | Portal 1A to north of HUH | • Using existing MLR/SP 1900 trains • Using existing ballast tracks (above ground) • Freight train operations to cease • Infrequent Intercity and maintenance locomotive movements, same as the prevailing condition • Alignment of Ho Man Tin Siding slightly revised | • Using new 9-car trains of SP 1900, or equivalent • Using slab tracks at tunnel near Carmel Secondary School • Using new HUH platform • Freight train operations to cease • Infrequent Intercity and maintenance locomotive movements, same as the prevailing condition • Alignment of Ho Man Tin Siding slightly revised | North of HUH to Hung Hom NOV | • Using existing MLR/SP 1900 trains • Using existing ballast track (above ground) • Using existing EAL platform • Freight train operations to cease • Infrequent Intercity movement, same as the prevailing condition • Realigned Cheong Wan Road • New Exhaust/Intakes at HUH in operation (since Yr 2018) | • Using new 9-car trains of SP 1900, or equivalent • Using new slab tracks (most are underground) • Using new platform • Freight train operations to cease • Infrequent Intercity movement, same as the prevailing condition • Realigned Cheong Wan Road | Table 2 Operational Phase Elements 3. 1. 4

Scope of the EIA study

In accordance with the EIA Study Brief and the EIAO-TM guidelines, the EIA has been conducted in the fields include Landscape and Visual Impacts, Air Quality, Airborne Noise Impact, Ground-borne Noise Impact, Water Quality Impact, Waste Management Implications and Land Contamination. 3. 1. 5 Conclusion of the EIA report after mitigation Overall, the EIA Study has concluded that the Project is environmentally acceptable in compliance with environmental legislation and standards and provides substantive societal benefits. With the implementation of environmental control measures during construction and operation of the Project, the individual impacts are minimized and there would be no adverse residual impacts from the project. 3. 2 EIA Report 2: “ Liantang Heung Yuen Wai Boundary Control Point and Associated Works” 3. 2. 1 Project Background

It is anticipated that the volume of cross-boundary traffic will continue to increase with the closer ties of Hong Kong-Shenzhen and the completion of the planned Eastern Corridor in Shenzhen, Consider to this, the Liantang Heung Yuen Wai Boundary Control Point was designed to meet the future traffic demand and re-distribute cross-boundary traffic amongst the crossings in the east. 3. 2. 2 Construction Involved The Project consists of two main components, construction of a BCP; and construction of a connecting road alignment. The connecting road alignment consists of six main sections: 1. Lin Ma Hang to Frontier Closed Area (FCA) Boundary - this section comprises at-grade and viaducts and includes the improvement works at Lin Ma Hang Road; 2.

Ping Yeung to Wo Keng Shan - this section stretches from the Frontier Closed Area Boundary to the tunnel portal at Cheung Shan and comprises at-grade

and viaducts including an interchange at Ping Yeung; 3. North Tunnel - this section comprises the tunnel segment at Cheung Shan and includes a ventilation building at the portals on either end of the tunnel; 4. Sha Tau Kok Road - this section stretches from the tunnel portal at Wo Keng Shan to the tunnel portal south of Loi Tung and comprises at-grade and viaducts including an interchange at Sha Tau Kok and an administration building; 5. South Tunnel - this section comprises a tunnel segment that stretches from Loi Tung to Fanling and includes a ventilation building at the portals on either end of the tunnel as well as a ventilation building in the middle of the tunnel near Lau Shui Heung; 6.

Fanling - this section comprises the at-grade, viaducts and interchange connection to the existing Fanling Highway. The construction of the project are concluded in the following Table 3 Table 3 Construction involved the Liantang project 3. 2. 3 Projects call for the assessment of EIAO (i) Site formation for the construction of a BCP building in the area of Chuk Yuen Village; (ii) Drainage facilities discharging into the Shenzhen River associated with the BCP; (iii) cargo processing facilities including processing kiosks for clearance of goods vehicles, vehicle holding areas, customs inspection platforms, cargo examination buildings, X-ray building, weigh stations etc. (iv) Passenger related facilities including processing kiosks and examination facilities for private cars and coaches, passenger clearance building and halls, etc. ; (v) Accommodation for and facilities of the Government departments providing services in connection with the BCP; (vi) Provision of transport related facilities inside the BCP including public transport interchange, and transport drop-off and pick-up areas; (vii) Other peripheral

structures and supporting facilities such as bridges across Shenzhen River, border road and fences, water supply system, utilities, culvert, drainage and sewerage etc. ; (viii) Construction of a dual two-lane trunk road with traffic control and surveillance system connecting the BCP with Fanling Highway adjacent to Wo Hop Shek - which comprises approximately 5. km of viaduct and/or at grade sections, and two tunnel sections totalling 5. 7 km in length, tunnel administration building and tunnel ventilation system; (Ix) Associated diversion / modification works at Lin Ma Hang Road to cope with the BCP development; (x) Associated environmental mitigation measures, landscaping works, drainage/ sewerage, waterworks, utilities and traffic engineering works; and (xi) Collection, treatment and disposal of sewage generated from the BCP via provision of an on-site sewage treatment facility to a tertiary level with proposed Membrane Bioreactor (MBR) treatment and effluent reuse. The Project is classified as Designated Projects (DPs) based on items A. 1 and F. in Part 1 of Schedule 2 of the EIA Ordinance: A dual two-lane trunk road connecting the BCP with Tolo/Fanling Highway - about 5. 3km on viaduct or at grade and 5. 7km in tunnels (item A. 1); and Reuse of treated sewage effluent from a tertiary treatment plant for irrigation at the BCP (item F. 4.).

3. 2. 4 Scope of the EIA study In accordance with the EIA Study Brief and the EIAO-TM guidelines, the EIA has been conducted in the fields include Air Quality, Noise Impact, Water Quality Impact, Water Quality, Waste Management Implications, Land Contamination, Ecology, Fisheries, Landscape, Visual and Glare, Cultural Heritage. The discovered assessment points have been concluded in Appendix 1. The relevant mitigation measures list in Appendix 2.

3. 2. Conclusion of the EIA report after mitigation Based on the results of the assessments, the EIA study concludes that the Project

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would be environmentally acceptable and in compliance with the environmental legislation and standards. With the implementation of the recommended environmental mitigation measures, no significant adverse residual impacts from the Project are anticipated. A comprehensive environmental monitoring and audit programme should be implemented to check the implementation of mitigation measures and environmental compliance.

4. Comparison of the Case studies

4. 1 Noise Impact Assessment

4. 1. 1 General Review of the project

The follows Table 4 demonstrates a general condition of two projects in noise impact assessment: Table 4 Noise impact assessment of two projects It is worth mentioned that in the Liantang project, it anticipates the predicted operation noise level in the next 30 years which the SCL project does not include due to their operation noise stem from electric rails but not cars.

4. 1. 2 Environmental Legislation, Standards and Guidelines The regulations adopt in the SCL and Liantang projects, as shows in Table 5, the NCO and EIAO-TM play dominant role in restrict the standards. IND-TM is also applied into both the Construction phase and operation phase for the airborne and ground borne noise impact assessment in the two projects.

For a better control of air quality assessment during the construction phase, both the SCL and Liantang introduce DA-TM and GW-TM as their guideline. The SCL project also introduced the PP-TM to Construction phase and HKPSG to Operation phase, respectively. Table 5 Standards used in two projects

4. 1. 3 Description of environment, NSRs. Background noise In the SCL project, noise measurements have been conducted from January to April 2009 to identify the prevailing noise levels, ss observed during the measurements,

existing noise was dominated by traffic noise from major roads. Railway noise from the East Rail Line was also audible at some locations.

However, there was no information offered in the report on the assessment methodology for the background noise. The Liantang Project, Noise surveys were carried out from November 2009 to April 2010 to investigate the background noise condition of the surrounding environment and the Project Area. The method to measure the background noise as follows: During each measurement, the sound level meter was checked using an acoustic calibrator generating a sound pressure level of 94dB(A) at 1kHz immediately before and after the noise measurement. The measurements were accepted as valid only if the calibration levels before and after the noise measurement were agreed to within 1.0dB(A).

Moreover, the sound level meters and acoustic calibrators are calibrated in accredited laboratories yearly to ensure reliable performance. Noise Sensitive Receivers As the SCL project is located at the urban area, while the Liantang project build at the remote places, the different categories of potential NSRs account for the proportion differently in the total discovered. The selected NSRs in SCL were assigned to Residential, Commercial as well as Educational places. Whereas the eligible NSRs in the Liantang project belonged to Residential, agricultural places as well as green belt due to several villages nearby.

4. 1. 4 The Main Parts of Noise Impact Assessment

The main parts of Noise Impact Assessment include: ? Potential sources of Impact, ? Assessment methodology ? Evaluation of Impact ? Mitigation measures ? Evaluation of Residual Impact ? Evaluation of Cumulative impact (if possible) The SCL report introduced these procedures one by one,

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whereas the Liantang report, in accordance with the different nature of various noises, separately interpreted the content of the procedures in construction phase, operation phase and fixed plant noise. 4. 1. 4. 1 Assessment Methodology Both the SCL and Liantang project faced noise during Construction phase, stem from the PME for various construction activities.

For the Operation phase, the SCL and Liantang projects suffered from railway noise and traffic noise, respectively. Construction phase Both the two project made use of the GW-TM, and regarded the BS 5228 Part1: 2009 as a complement for sound power level (SWL). The function as follow: $SPL = SWL - DC + FC$ (1) where Sound Pressure Levels, SPL in dB(A) Sound Power Levels, SWL in dB(A) Distance Attenuation, DC in dB(A) = $20 \cdot \log(D) + 8$ (where D is the distance between NSRs and noise source in meters) Facade Correction, FC in dB(A) = 3dB(A) For assessing the Groundborne Noise, the SCL and Liantang project adopted different function (Table 6) Groundborne Assessment methods| SCL| Liantang|

Function| $L_p = L_v, rms + C_{dist} + C_{damping} + C_{building} + C_{floor} + C_{noise} + C_{multi} + C_{cum}$ | $LA = L_v, rms + C_{dist} + C_{damping} + BCF + BVR + CTN + C_{cum}$ | Interpretation| L_v, rms : Reference Vibration Source, $C_{building}$: Coupling Loss into Building Structures, C_{floor} : Coupling Loss per Floor C_{noise} : Conversion from Floor Vibration to Noise Levels, C_{multi} : Multiply Source Factor C_{cum} : Cumulative Effect. | LA: A-weighted Ground-borne noise level at NSR, ref: 20 ? -Pascal C_{dist} : Distance attenuation $C_{damping}$: Soil damping loss across the geological media L_v, rms : Vibration velocity (in RMS) of a PME at a reference distance BCF : Vibration coupling loss factor between

the soil and the foundation, relative level
BVR: Building vibration reduction or amplification within a structure from the foundation to the occupied areas, relative level
CTN: Conversion from floor and wall vibration to noise, 10-8 m/s or 10-6 in/s to 20 ? Pascal
C cum: Cumulative noise impact from concurrent projects| Analyze the different: The principles of two functions are the same, except the Liantang one introduce the Building Vibration Response (BVR) to influence the function due to the consideration that Since ground-borne vibration level will be the highest on the lower level of a building, a conservative building structure attenuation factor of 2dB per octave band. | Table 6 Different methods used in air impact assessment Operation phase The source of noise during the operation phase in the SCL and Liantang projects are railway noise and traffic noise respectively. Because of this, different functions for calculating the airborne and groundborne noise have been separately adopted in the assessment procedure.

It is worth to mention that the assessment methodology used in Liantang project, which build up 4 models (include 1) a comparing the noise level with and without project, 2) a comparing between unmitigated and mitigated, 3) an assessment on effectiveness and adequacy of noise mitigation measure and 4) an assessment on noise level of NSRs to testify the effect of the Noise impact) to decompose and ensure the effect, ensure the noise criteria have been effectively obeyed and the mitigation measures implemented efficiently. 4. 1. 4. 2 Mitigation Measures Construction phase: During the construction phase, both the projects adopted the following methods to reduce noise: good site practice to limit noise emissions at source; selection of quieter plant; use of movable noise barrier; use of noise enclosure/

acoustic shed; and use of noise insulating fabric. Subtle difference when they make use of each of these measures: For the Good sit practice, the SCL project mentioned one more strategy than the Liantang project: Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.

It emphasizes the important role of silencers and mufflers, with this announcement, the practice work will pay attention to the maintenance of the silencers device. In the Use of Movable Noise Barrier part, except demonstrate the effectiveness of this equipment in reducing the noise, the SCL and Liantang projects also regulated the material quality of the noise barrier (14 kg/m² and 7 kg/m², respectively.). This regulation is important, as various materials for noise barriers perform differently in prevent the noise, only a defined material quality can ensure the effect of noise reduction is really achieved. Temporary hoardings was also applied in used in the SCL project, it was 2.4 meters high. Operation phase | SCL | Liantang |

Source of Noise | Railway Noise | Traffic Noise | Mitigation Measures | ? 150m long natural ventilated absorptive noise enclosure | Low noise road surfacing (LNRS); Noise barrier/enclosure | 4. 2. 5 Conclusion What should be highlighted here is the mitigation method of Low noise road surfacing during operation phase for the Liantang project, which is an effective way to reduce the noise caused by traffic. The source of traffic noise mainly stem from the friction between the tires and road surface and engine noise. Consider to this, efficient low noise road surfacing can reduce the traffic noise at the born phase. Furthermore, several new materials for low noise road surfacing (rubber road, etc. are available currently, it is reasonable to anticipate the

development of effective way to reduce traffic noise will lie on the new materials for pavement. 4. 2Air Impact Assessment 4. 2. 1 General Review of the project SCL Construction: 1. Sources of the air contaminants: mainly be related to construction dust from excavation, spoil removal, wind erosion as well as material handling at the barging point 2. ASR: 14 representatives within 500m from the project alignment. 3. Air quality of unmitigated scenario: the predicted cumulative maximum hourly, daily, and annual average TSP at most ASR would exceed the criteria stipulate in EIAO-TM and AQO. 4.

Mitigation measures: 1) watering on active works areas, exposed areas and paved haul roads 2) enclosing the unloading process at barging point, etc 5.

Air quality of mitigated scenario: The hourly, daily and annual TSP in all ASRs would comply with the EIAO-TM hourly (500? g/m³) and AQO daily and annual TSP criteria. (260? g/m³ and 80? g/m³m³) Operation: 1. As the train will be electrically operated, air quality impact is therefore not anticipated during operational phase. 2. Exhausts for general ventilation and smoke extraction facilities will also be carefully positioned Liantang / Heung Yuen Wai Boundary Control Point and Associated Works Construction: 1.

Source s of the air contaminants: The main construction activities that would contribute to construction dust impacts include excavation/earth works, road works, slope works, site formation and construction of superstructures such as the buildings within the BCP and the tunnel ventilation buildings. 2. ASR: A total of 46 air sensitive receivers (ASRs) were identified for the construction phase assessment. 3. Air quality of unmitigated scenario: 20 ASRs that would potentially be subjected to exceedance of hourly TSP criterion. 4 ASRs would

potentially be subjected to exceedance of daily TSP criterion. No ASRs will exceed the annual criterion. 4. Mitigation measures: 1) water spraying of up to 8 times per day for active construction areas; 2) 80% of stockpiling area with impervious sheeting; 3) Limit the speed of construction of vehicles to 10km/hour; 4) pave all haul road within the site 5.

Air quality of mitigated scenario: The hourly, daily and annual TSP in all ASRs would comply with the EIAO-TM hourly (500 $\mu\text{g}/\text{m}^3$) and AQO daily and annual TSP criteria. (260 $\mu\text{g}/\text{m}^3$ and 80 $\mu\text{g}/\text{m}^3$) Operation: 1. Sources of the air contaminants: vehicular emissions from the open roads, ventilation shafts, mid-ventilation building in Hong Kong, kiosks, loading and unloading areas and public transport interchange (PTI) of the BCPs on both Hong Kong side and Shenzhen side and the on-site sewage treatment works at the BCP Key air pollutants: NO₂ and RSP 2. ASRs: 49 ASRs were found 3. Air quality of unmitigated scenario: The results of the operational phase air quality assessment showed that the predicted hourly, daily and annual NO₂ levels as well as the daily and annual RSP concentrations at all 49 ASRs were in compliance with the corresponding AQOs (300 $\mu\text{g}/\text{m}^3$, 150 $\mu\text{g}/\text{m}^3$ and 80 $\mu\text{g}/\text{m}^3$ for NO₂ and 180 $\mu\text{g}/\text{m}^3$ and 55 $\mu\text{g}/\text{m}^3$ for RSP, respectively) 4. Mitigation measures: For the on-site sewage treatment works at the BCP, total containment of sewage channels and provision of deodorization facilities will be implemented. 5. Air quality of mitigated scenario: The nearest ASRs are at least 490m away from the sewage treatment works, it is anticipated that there would not be significant odors impact on the nearby ASRs. 4. 2. Procurement of relevant laws, regulations and pollutant emission standards Both of the SCL and the Liantang project completed the EIA report

based on the guideline and air quality assessment that are stipulated in EIAO-TM, in which the maximum allowable concentrations over specific periods for typical pollutants should be met. Some specific requirements on air quality assessment for SCI Project are stipulated in Clause 3. 4. 2 of the EIA Study Brief. Both the SCI and Liantang Projects adopt “ Air Pollution Control Ordinance (APCO)”, “ Air Pollution Control (Construction Dust) Regulation” to regulate their air quality and construction dust density.

Meanwhile, the Liantang Project also procure the “ Practice Note on Control of Air Pollution in Vehicle Tunnels” which published by EPD to control the tunnel air quality. Table 7 the guidelines for Air impact assessment in Liantang Project 4. 2. 3 Background air pollutants concentrations adopted in Projects Background air quality: The level of TSP (total suspended particulates) is the major concern in the SCL project. It make use of the five years (2006 -2010) annual average monitoring data recorded at EPD’s general air quality monitoring stations in urban areas to estimate the background TSP concentration since there is no EPD general air quality monitoring station located in projects areas. Unlike the SCL project, the Liantang project had EPD record in the project area.

Therefore, the latest available 5-year average ambient concentrations of pollutants measured at EPD’s Tai Po Air Quality Monitoring Station have been taken as the background concentrations for the air quality assessments. In the Liantang project, it also cared about the density of NO₂ and RSP (respirable suspended particulates) which was not the issue in the SCI project. Noteworthily, the report prove its effective in control the air emission by taking the future reduction of emission in this area into consideration,

with which a lower background concentration would be generated in the coming years. The TSP background concentration in SCI and Liantang were 75.2 and 66.6 $\mu\text{g}/\text{m}^3$, respectively.

The background concentrations of NO_2 and RSP in the Liantang project were 50.4 and 49.9 $\mu\text{g}/\text{m}^3$. ASRs: 1) In the SCL project, the verification of ASRs in this project according to the guidance of EIAO-TM (any domestic premises, hotel, hostel, hospital, clinic, nursery, temporary housing accommodation, school, educational institution, office, factory, shop, shopping centre, place of public worship, library, court of law, sports stadium or performing arts centre are considered as ASRs.) 500m from the Project alignment and boundaries of all associated areas under the project was the scope for air impact assessment stipulated in the EIA study brief. 14 respectively ASRs were selected eventually. 00m was also the scope for the Liantang project, however, as the place the project covered were mostly at the broad land of Hong Kong and Shenzhen and remote area of Hong Kong, the ASRs of interest were mainly scattered village houses situated in the vicinity of the BCP or alongside the BCP connecting road. In addition, the air intake point(s) of the buildings in the BCP were also considered in the project. 49 respectively ASRs were selected eventually. Among the ASRs, CY3 was eliminated considered that it would be relocated to resite. 2) In the SCL project, the lowest height for air sensitive use at respective ASRs locations was taken as either at 1.5m above local ground level (AGL) which is the average height of the human breathing zone or at the lowest height, in view of the construction phase would be or mostly under the ground level using

cut-and-cover method and the operation phase had no remarkable contaminants.

Then, the assessment heights (in AGL) were arranged at 1, 5, 10, 15&20, respectively. In the Liantang project, since all the ASRs except BDG1 are low-rise village houses or playground, three assessment levels have been adopted, which are 1. 5m, 5m and 10m above local ground level (AGL).

4.2.4 Potential source of Impact and Assessment methodology The SCL project pay more attention to clarify the potential sources of impact, while the Liantang project emphasis more on the methods for the assessment.

Potential source of Impact In the SCL project, major construction works that would contribute to construction dust impacts vehicle emission caused the air impact in the operation phase.

In order to clarify the different contribution of various parts of the project on air quality impact, the SCL project analyze the project by dividing it into separated parts include (construction stage) cut and cover works for tunnel and surface works; construction of superstructures including the ventilation shafts; modification work to HUH podium structure; loading/unloading at barging point and (operation stage) vehicle operation to the east, west, north, south of the road. While the Liantang project, it only simply concluded that construction dust and vehicle emission would generate in the construction and operation phase without figuring out the different contribution of contaminant factors at different part of the project.

Assessment Methodology Both the SCI and Liantang projects calculated the Emission Inventory and utilized Dispersion Modeling & Concentration Calculation to do the assessment. The Liantang project also considered the

effect of weather, which adopted the Meteorological data for a full year measured at the vicinity of the project into its Fugitive Dust Model (FDM).

The Liantang project also calculated the cumulative impacts of all influence factors for air quality. For the operation stage, only qualitative approach is adopted to address the air quality implications in the SCI project. While the Liantang project carefully analyzed the different emission areas with different assessment methods: Emissions from Open Roads> Emissions from Ventilation Shafts and Building of Tunnels> Emission from Tunnel Portals> In-tunnel Air Quality> Emission from kiosks, loading and unloading areas and PTI> Cumulative Impacts> Calculation of Total Concentration 4. 2. 5 Prediction Mitigation and Evaluation of Environmental Impact Overall review

Both the SCL and Liantang projects achieve the evaluation goal by comparing the unmitigated scenario with the post mitigated ones, so that to demonstrate the effectivity of their implemented mitigation measures. Slightly difference in terms of the organization indicates in this part. The SCL adopt the unmitigated scenario> Specify details on the mitigation methods> mitigated scenario, while the Liantang chiefly introduced the different performance of air impact between the unmitigated and mitigated project and interpreted what the mitigation measures it had adopted, separately. Its analysis also divided the TSP index into hourly, daily, and annual branches which the SCL never done. The former one showed us a natural procedure: “ Problem-solution----problem was effectively solved by showing the post--addressed data” model.

When it comes to the Liantang project, more concentration would be on fulfilling the requirement of EPD on the organization of EIA report. The <https://assignbuster.com/eia-case-study-a-comparison-of-two-eia-reports/>

benefit of SCL organization is more agreement and approval can be acquired from us, in another words, the report can facilities more populace to understand the report without having relevant knowledge. The advantage of Liantang organization may satisfy the EPD authority much more because it introduced every procedure in detail required in EIAO-TM. Furthermore, the Liantang project, also assess the emission control as well as the Odour from the Proposed Sewage Treatment Works in satisfying of the specify need of this project. These parts were not included in the SCL project. Mitigation measures

Except the common dust control measures which were adopted in both the two projects, dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation as well as good site practices were also included in the SCL and Liantang projects. One other point worth emphasizing is that the Liantang project 4. 3 Water Impact Assessment 4. 3. 1 General Review of the project 4. 3. 1. 1 Water quality background The SCI and Liantang projects made use of the monitoring data in the vicinity areas given by authorities to describe their environment. Due to the absence of water quality information at Kong Yiu Channel in the Liantang project, a water quality survey was conducted at Kong Yiu Channel near the Works Area. With the above mentioned ways, the water qualities of the project environment were confirmed. . 3. 1. 2 Water Sensitive Receivers SCI: There is no remarkable WSR in the project except three cooling water intakes were identified within 300m from the project boundaries. Liantang: Key water sensitive receivers that may potentially be affected include: Shenzhen River (WSR1); Kong Yiu Channel (WSR2); River Ganges (WSR3); River Indus

(WSR4); Ma Wat Channel (WSR5); Streams at Kau Lung Hang (WSR6); Upstream of Man Uk Pin Stream (WSR7)

4. 3. 2 Environmental Legislation, Standards and Guidelines

EIAO-TM is the basic legislation for both the SCI and Liantang projects to do the water impact assessment and mitigation. Besides the EIAO-TM, both the two projects introduced Water Pollution Control Ordinance involve “ Water Quality Objectives” and “ Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters” to benefit the assessment. Furthermore, “ Practice Note for Professional Persons on Construction Site Drainage” provided sufficient practice guidelines for handling and disposal of construction site discharges. The Liantang project also adopted the criteria of “ no net increase in pollution load requirement” as specified in the Town Planning Board Guidelines No. 12B. It is believed that this guideline would be useful on protecting important habitats and wildlife of the Deep Bay region.

4. 3. 3 Prediction and Evaluation of Impacts

The commonly used approaches for Environmental impact predictions are as follows:

- Mass Balance Approaches: calculations to determine average concentrations and percentage changes in pollutant loadings
- Mathematical Modeling Approaches: the physical system is reduced to one or two dimensions using mathematical expressions to simplify the data requirements and solution techniques
- Aquatic-Ecosystem-Modeling Approaches: Instream flow incremental methodology (IFIM); Habitat evaluation procedure (HEP); Habitat evaluation system (HES)

In the SCI report, no above mentioned method was introduced in both the construction phase and operation phase. Whereas the Liantang report, the Mass balance

approaches were adopted in most of the impacts in operation phase. For example: In the BCP part, it revealed that the estimated additional peak discharge generated from the proposed development is about 6.5 m³/s under a 1 in 50 year return period storm, which is approximately 2. % of the peak flow of the existing Shenzhen River near River Ganges; in the Road part, the net increase in water level and discharge at the Fanling Highway Connection are less than 20 mm and 1 m³/s respectively to showed the impact is considered insignificant; In the Sewage effluents and sewerage impact, approximately 185m³/day and 142.56m³/day average dry weather flow generated from the proposed BCP at Hong Kong side and Resite of Chuk Yuen Village are estimated. By using this method, vague impact can be clearly understood and measured.

4.3.4 Water Quality Mitigation Measures

4.3.4.1 Construction Phase Construction site runoff and drainage

The common measurements in both the SCL and Liantang project include something concern on-site drainage system, sediment basins-sand removal facilities, inspection, temporary cover during wet season excavation, vehicle should be washed, Open stockpiles of construction materials (e. g. aggregates, sand and fill material) on sites should be covered with tarpaulin or similar fabric during rainstorms, etc. The Liantang project also mentioned the build of Ditches to to facilitate the runoff discharge into stormwater drainage system through a sediment/silt trap. While the SCL project did many detail design for its mitigation methods: Minimum distances of 100 m should be maintained between the discharge points of construction site runoff and the existing saltwater intakes; it said it should undergo the removal of settleable solids in a silt removal facility, and pH adjustment as necessary.

Both two reports mentioned a discharge licence was also requisite for effluent discharge.

In addition to list out the mitigation measures, the Liantang project also stipulated the water mitigated conditions should be achieved: “ Adequate measures should be implemented to ensure no pollution or siltation occurs to the catchwaters and catchments. No earth, building materials, oil or fuel, soil, toxic materials or any materials that may possibly cause contamination to water gathering grounds are allowed to be stockpiled on site. All surplus spoil should be removed from water gathering grounds as soon as possible. Temporary drains with silt traps should be constructed at the site boundary before the commencement of any earthworks. Regular cleaning of silt traps should be carried out to ensure proper operation at all time. All excavated or filled surfaces which have the risk of erosion should always be protected form erosion.

Facilities for washing the wheels of vehicles before leaving the site should be provided..... ” These standards were really useful, as the predefine mitigation measures may not practical after the commencement of the project. In order to reduce the water impact at best, guidelines on to what extent the performance of the changed mitigation methods should achieved can guarantee the water mitigation efficient. Other concerns part For the Accidental Spillage, the Liantang project regulated all fuel tanks and storage areas should be provided with locks and be sited on sealed area. Whereas the SCL emphasized the protection of Waste disposal so as to minimize the possibility of accidental spillage.

First, it required the contractor to be registered as a chemical waste producer; the Waste Disposal Ordinance is regulated follows. 4. 3. 4. 2

Operation phase In the operation phase, the SCL project emphasis the important role of filtering, it regulated many filter-like processes before the discharge. While the Liantang project adopted a dry weather flow intercepting system in the BCP to minimize the pollutants discharging in the Shenzhen River. 5. What do the Case Studies Highlight from the Two EIA report EIA, in essence, is an assessment of the impact of a planned activity on the environment. The ultimate aim of EIA is to control, contain, minimize, and even remove a development activity's potential negative impacts on the environment.

The core concept of " Environment", can be defined as the combination of elements of whose complex inter-relationships make up the settings, the surroundings and the conditions of life of individual and of society, as they are or as they are felt. Therefore, the concept of environment should be based on the feeling of every people in the regions. In view of this, a qualified EIA report should to some extent comply with the criterion: the information within the report, regardless of the professional or non-professional parts, will pursue to be understood by the most stakeholders, both the authorities and the public. To achieve this goal, the professional EIA report which used to only be fully understand by the professional, need more show forms that facilitate the others without relevant background to read.

Two of the mentioned show forms, have been successfully utilized in the Liantang Projects---- 1) The public consultation during the projects; and 2) 3D EIA attach to the EIA report. The effect of these two methods satisfies the

objective of the EIA at best. Both of the two measures should be advocated to the EIA of future projects. The comparison of the SCL and Liantang projects on “with and without” as well as “practice well and practice not well” the two methods revealed their prominent role play in Environmental impact assessment. 5. 1 Public Participation in the Projects Mentioned in the “Project Description”, both the two projects asserted that they did a great job in encouraging the joint-force of the Public participation for the projects.

Nevertheless, the huge differences of performance on the public participation were found after comparing the two projects. The Liantang complied with the expected actions of EPD on accommodating the public at best while the SCL did not. In the Liantang project, there were a lot of project alternatives be adopted in cooperation with the Public. The media of the consultation was Meeting. In order to effectively utilize the public suggestions, the meeting was carried out into two stages: Stage 1, meeting with the public to gather the views and expectation; Stage two communications of findings and possible outcome. This method was proved efficiently by the subsequent outcome of the public participation. (Table 8).

With the help of enough interactions with the Public which initially regulate in the EIAO-TM, we can see a more beneficial Liantang project was invented after a lot of reconciliation. Therefore, the Liantang project did very well in public participation. Table 8 However, the SCL did the public consultation quiet perfunctory when it compare in parallel with the same work within Liantang project. From the information offered in the EIA report, the SCL project indicates it insufficiency in interacting with the public. The report introduced that their public consultations were mainly achieved by “roving

exhibitions, public and professional forums, and seminars”, and details on how to carry the activities out and the outcome of the public participation were not illustrated in the report.

Having found that most of the activities are advertising of the projects and lack of directly interaction and lack of mention on the contribution of public participations, we can interfere that quite a few of the public benefit had been ignored in the project process due to the paucity of listening to the public view. In conclusion, the SCL project is not eligible in according to the criteria on public participation of regulated in EIA study brief. 5. 2 3-D EIA The 3-D EIA technology has been used in the Liantang project, where an addition bottom of [Electronic visualization], as shown in Table 9, displays on the website together with other traditional EIA parts. Clicking into the [Electronic visualization], an overview of the project location firstly shows on the screen.

With a natural blue background color, the welcome image indicates us that a topic that emphasis environment a lot would demonstrate subsequently. Then, the homepages are supported by several useful icons which are “ Introduction”, “ Baseline”, “ consideration of alternatives”, “ Preferred Option” and “ Impact Assessment”. Each of the branches contains some parts of the simplified content which have already been introduced in the EIA report. In cooperation with 3-D model of BCP, all the information can be understood by amateurs in an active and easy way. Table 9 3D-EIA share on the website The approach of 3-D EIA is very useful in many aspects:) The 3-D EIA are based on the information provided in the EIA report, and photos which were taken in practical sceneries. These ensure the authority and

reliability of the information provided on the website. 2) 3-D model was adopted to simulate the comprehensive project. Obviously the project will be more vivid than the traditional two-dimensional maps. 3) As the internet is not necessary to present information in a formal way, the colloquial kind of English along with the attached photos which display different kinds of important features in the assessment benefit more people to understand EIA report more deeply. Apparently, 3-D EIA report is really useful and should be applied to more project assessment. 6. Conclusion and future application of the Cases

This study reviews the Environmental Impact Assessment Report of the Liantang / Heung Yuen Wai Boundary Control Point and Associated Works (Agreement No. CE 45/2008) and the Shatin to Central Link- Mong Kok East to Hung Hom Section (Agreement No. NEX/2213). Comparison on Noise impact assessment, Air impact assessment and Water impact assessment have been conducted during the process. The Assessment approaches and mitigation methods during the construction phase in the two projects are generally same due to their environmental problem in the three branches (air, water, and noise) were assigned to the similar categories. In the operation phase, the two projects implemented different measures.

The study also highlights the vital role of public played in the Liantang Project, where many of the alternatives are adopted for the initial ones. Instead of advertising-like implementation the public participation strategies like those in the SCL project, the Liantang project actively encouraged the mass to be joint-force to influence the decision-making at some of the location of road or channel, etc. From the experience of this project, we know

that the original decision on the project by the contractor would be unavoidable deficient and may ignore some benefits of the stakeholders. With the help of public participation, complementary effort was generated to revise the project.

The 3D EIA is also one of the lightspots discovered during the comparison. Its application in the Liantang project demonstrates the unique role it can act in the EIA report. By attaching the 3D maps, dynamic flash-made pictures, and more persuasive computing model on the website, more amateurs or stakeholders which have been rejecting to participate due to the insufficient professional background is acceptable to the EIA inspection. The 3D EIA narrow the gap between the authority and the mass further. In view of this, the future trend of EIA is recommended to put more focus on ensuring the public participation and adopt the new 3D technology to assist the EIA report. References 1.

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