

7 LAND CONTAMINATION

7.1 INTRODUCTION

- 7.1.1 This *Section* presents the potential implications of land contamination due to historical and current land uses within the Project site.
- 7.1.2 Site appraisal, including desktop review and site walkover, was conducted to identify the presence of potential land contamination and assess the potential land contamination impacts within the Project site. Should any historical or current land contamination activities and potential land contamination issues be identified in this EIA, further land contamination assessment would be recommended to be undertaken prior to commencement of the construction phase.
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7.2 LEGISLATION, STANDARDS AND GUIDELINES

- 7.2.1 The following EPD's guiding documents are referenced for this land contamination assessment:
- Annex 19 of the Technical Memorandum on Environmental Impact Assessment Process (Annex 19 of EIAO-TM);
 - Guidance Note for Contaminated Land Assessment and Remediation (the RBRGs Guidance Note);
 - Guidance Manual for Use of Risk-based Remediation Goals for Contaminated Land Management (the RBRGs Guidance Manual); and
 - Practice Guide for Investigation and Remediation of Contaminated Land (the Practice Guide).
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7.3 DESCRIPTION OF THE ENVIRONMENT

- 7.3.1 This Project is to improve So Kwun Po Interchange (SKPIC), with a new-built road referred as So Kwun Po Link (SKPL), comprising an at-grade road, an underpass, a single 2-lane flyover (main ramp) and a single 1-lane flyover (side ramp) connecting San Wan Road and Pak Wo Road; and other road re-alignments, junction improvements and associated works at So Kwun Po Road, San Wan Road and Pak Wo Road. The location of the Project is shown in **Figure 1.1**.
- 7.3.2 As shown in the site location provided in **Figure 1.1**, the Project site is located on generally flat terrain and is mainly bounded by high-rise residential buildings to the south, village and vegetated land to the north, education institutions to the west and a regional park to the east.
- 7.3.3 Based on the latest engineering design and as shown in **Figure 2.2**, the Project would include the construction of at-grade roads, depressed roads, elevated roads and other associated works where soil excavation could be anticipated within the Project site.
- 7.3.4 The land uses in close vicinity of the Project site are urban residential with community and recreational facilities (i.e. sport centre and park), institutional use (i.e. schools) and vehicle road networks.

7.4 ASSESSMENT METHODOLOGY

- 7.4.1 Land contamination assessment was undertaken in accordance with the criteria set out in Annex 19 of the EIAO-TM, as well as other Guidance Note, Practice Guide, Guidance Manual and related legislation as presented in **Section 7.2**.
- 7.4.2 A site appraisal, including desktop review and site walkover, was conducted to identify the potentially contaminating activities that may pose an adverse impact on the Project site. Site walkovers were conducted within the Project site to review the general site conditions and to identify any sources of land contamination. For the desktop review, the following information was reviewed:
- Historical aerial photos from the Lands Department (LandsD);
 - Hong Kong Geological Survey Map (Series HGM20) – Sheet No. 3 (1:20,000); and
 - Records on chemical waste and chemical spillage/leakage from the identified potentially contaminated sites from Environmental Protection Department (EPD) and other relevant publicly available information.

7.5 IDENTIFICATION OF POTENTIAL LAND CONTAMINATION

Desktop Appraisal

- 7.5.1 A review of past land uses of the Project site was conducted by reviewing the relevant historical aerial photographs in the years between 1963 and 2021. The aerial photographs were obtained from the Surveys and Mapping Office of LandsD. This review aims to evaluate potential land contamination implications associated with any land changes within the Project site. The historical land uses within the Project site are summarised in **Table 7.1**. The referenced historical aerial photographs and descriptions are presented in **Appendix 7.1**.

Table 7.1 Summary of Historical Land Uses

Period	Description	Potential Contamination (Yes/No)
1960s to 1970s	Based on the review of the historical aerial photographs from Year 1963 and 1973, the Project site was comprised of farmlands and village houses. Fanling Station and Sheung Shui Station were in operation.	No
1980s	Based on the review of the historical aerial photograph in Year 1983, the northern part of the Project site mainly consisted of undeveloped land, while the southern part of the Project site remained as farmlands and village houses.	No
1990s to 2000s	Historical aerial photographs from Year 1994 and 2004 indicated that the Project site consists of railway and vehicle roads, including So Kwun Po Road, San Wan Road, Fanling Highway, Po Wing Road and Pak Wo Road. North District Park commenced operation in March 1990.	No
2010s to Present	Historical aerial photographs from Year 2012 indicated that Po Wing Road Playground commenced operation. No significant changes were observed after Year 2012.	No

Site Geology

- 7.5.2 The superficial geology of the Project site generally comprises various Quaternary deposits. According to the published 1:20,000 Geological Map (Sheet No.3) and the archival ground

investigation records, the superficial deposit of the Project site comprises quaternary alluvium (clay, silt and sand), terraced alluvium and debris flow deposit (dune sand). The solid geology of the Project site consists of Tai Mo Shan Formation with feldspar and quartz crystals, some dark green biotite, and lithic lapilli of pale sandstone.

Record of Chemical Waste Producer

- 7.5.3 An enquiry was made to the EPD to obtain the Chemical Waste Producer (CWP) record of the Project site. A visit to the Chemical Waste Collection Licensing Section of the EPD Territorial Control Office was arranged on 21 December 2021 and information related to the CWP registered at the Project site was reviewed. No CWP record within the Project site was found in EPD's current valid and past CWP registration. Based on the above, no land contamination issue associated with the CWP record is anticipated.

Record of Chemical Spillage Incidents

- 7.5.4 Letters were sent to the EPD and Fire Service Department (FSD) on the records of chemical spillage incidents and chemical leakage for the Project site (see **Appendix 7.2**). Based on the replies from EPD and FSD, no records of chemical spillage incidents and chemical leakage were found within the Project site.

Record of Fire Incidents

- 7.5.5 A letter was sent to the FSD on the records of Dangerous Goods (DGs) and records of reported fire incidents at the Project site (see **Appendix 7.2**). Based on the reply from FSD, no DG license record and no chemical spillage incident were identified within the Project site. Yet, three fire incidents were reported within the Project site. **Table 7.2** below presents the incident records provided by FSD. The locations of the fire incidents are presented in **Appendix 7.2**.

Table 7.2 Record of Fire Incidents from FSD

Incident ID	Date	Approximate Address	Type of Incident
1	13 November 2019	Near Lamppost EA3271, Near San Wan Road	Vegetation Fire
2	13 May 2020	Lamppost N7885, Near So Kwun Po Road	Electrical Fire
3	30 June 2021	Near Lamppost DD0452, Near San Wan Road	Rubbish Fire

- 7.5.6 Based on the FSD's records, there were one vegetation fire incident, one electrical fire incident and one rubbish fire incident reported within the Project site in the last three years. Although these fire incidents occurred within the Project site, having further reviewed the type of construction works involved, no earthworks would be carried out at these incident locations. Therefore, potential contamination impact from the concerned electric fire to the Project site is not anticipated. The locations of the fire incidents and the extent of the earthworks within the Project site are presented in **Appendix 7.2**.

Site Walkover

- 7.5.7 A site walkover was conducted on 23 December 2021 to observe the conditions and identify signs of potential land contamination issues associated with current land uses and activities within the Project site. Site observations and findings are summarised in **Table 7.3**. Photos of the site walkover are presented in **Appendix 7.3**. The site walkover checklist is provided in **Appendix 7.4**.

Table 7.3 Summary of Current Land Uses

Area	Description
Vehicular roads	The Project site covers So Kwun Po Road, San Wan Road, Fanling Highway, Po Wing Road and Pak Wo Road. The vehicular roads involved were asphalt paved and were observed in good condition. No signs of oil stain were noted on those vehicle roads during the site walkover.
North District Park	The Project site covers a small proportion of North District Park, including a roller skating rink. They were observed in good conditions without any signs of oil stain and stressed vegetation during the site walkover.
Po Wing Road Playground	Po Wing Road Playground, including a football field, falls within the Project site. The ground was observed in good condition without any signs of oil stain during the site walkover.
MTR East Rail Line along San Wan Road	A section of the MTR East Rail Line connecting Fanling Station and Sheung Shui Station falls within the Project site. As observed during the site walkover, some WSD's temporary barricades were placed at the unpaved road along the MTR railway (Photo 7 of Appendix 7.3 refers). No signs of oil stain were noted. According to the site person-in-charge from WSD (<i>Contract no.: 5/WSD/19</i>), the contract involved pipe replacement works for Dongjiang water mains by open trench method. Neither chemicals nor dangerous goods were used and stored on-site within the Project site. No record of polluting activities under the aforementioned contract was found.

7.5.8 Based on the site walkover, the Project site is mainly occupied by non-contaminating land use including vehicle roads, footpaths, cycling tracks, parks and playgrounds, MTR East Rail Line and vegetation. No potentially contaminating land uses or activities were observed in the aforementioned areas. All Project sites are well paved with concrete, except for the WSD's 5/WSD/19 works area which is bare land. Neither storage and/or handling of hazardous chemical and chemical waste nor equipment repair and/or maintenance activities were observed within the Project site. No evidence of oil stains or chemical leakages and/or spillages were observed. Besides, no potential land contamination facilities, such as underground fuel oil storage tanks, underground oil pipelines, chemical and chemical waste storage areas, dangerous goods stores, wastewater treatment facilities and transformer rooms, were observed within the Project site. Also, no signs of obvious and suspected contamination such as abnormal odour and/or distressed vegetation were observed or notified at the Project site. To conclude, no land contamination issues (including land contamination activities and facilities) were found during the site walkover.

7.6 PREDICTION AND EVALUATION OF ENVIRONMENTAL IMPACTS

7.6.1 With reference to the aerial photos reviewed from the Survey and Mapping Office of LandsD, the Project site was in undeveloped status (i.e. natural terrain and agricultural land) in 1963 and before. The Project site was formed into part of the major road networks in the North District during the late 1980s to early 1990s and gradually developed as the present. No historical potential land contamination activities were identified within the Project site. Discussion on the historical aerial photos are provided in **Section 7.5.1** and **Appendix 7.1**.

7.6.2 Based on the available CWP records from EPD, no valid and past CWP registration was found within the Project site. Chemical waste storage and/or handling is not anticipated within the Project site. Discussion on CWP records is provided in **Section 7.5.3**. Moreover, further to the response from EPD and FSD, there are no records of chemical spillage incidents and chemical

leakage incidents within the Project site. The responses from these government departments were provided in **Appendix 7.2**.

- 7.6.3 Referring to the responses from FSD, no DG licence record and no chemical spillage incident was identified within the Project site. Yet, three fire incidents were reported within the Project site. Although these fire incidents occurred within the Project site, having further reviewed the type of construction works involved, no earthworks would be carried out at these incident locations. Therefore, potential contamination impact from the concerned electric fire to the Project site is not anticipated. Details of the incident records were presented in **Table 7.2** and **Appendix 7.2** and discussed in **Sections 7.5.4** to **7.5.6**.
- 7.6.4 According to the site walkover, the majority of the area of the Project site comprises concrete paved vehicle road networks and pedestrian access, except for the WSD's 5/WSD/19 works area which is bare land. No potential contamination activities (e.g. handling of hazardous chemical and/or chemical waste and repair and/or maintenance activities) and no potential land contamination facilities (e.g. aboveground/ underground fuel oil storage tank and oil pipeline, chemical and chemical waste storage area, dangerous goods store, wastewater treatment facility and transformer room) were observed within the Project site. No signs of obvious and suspected contamination such as abnormal odour and/or distressed vegetation were observed within the Project site. Therefore, no land contamination issues (including land contamination activities and facilities) were found during the site walkover. Details of the site walkover are provided in **Sections 7.5.7** to **7.5.8** and **Appendices 7.3** and **7.4**.
- 7.6.5 In view of the above, no potential land contamination issues are anticipated within the Project site. Therefore, it is considered that the land contamination impact associated with the Project is not anticipated. Further site investigation and mitigation measures are considered not necessary.

7.7 EVALUATION OF RESIDUAL IMPACTS

- 7.7.1 No land contamination impacts are anticipated for the Project. Thus, no residual impacts are expected.

7.8 ENVIRONMENTAL MONITORING AND AUDIT

- 7.8.1 No land contamination impacts are anticipated for the Project. Thus, environmental monitoring and audit for the Project are not required.

7.9 CONCLUSION

- 7.9.1 A desktop appraisal and a site walkover were carried out to identify any historical and current potentially contaminating land uses and activities within the Project site.
- 7.9.2 Based on the findings of the desktop appraisal (including a review of historical aerial photos and requests for information from related government departments) and site walkover, no potentially contaminating activities and facilities were identified within the Project site. Therefore, no adverse environmental impact in respect of land contamination is anticipated. Further site investigation works and mitigation measures are deemed not necessary for the Project.