

Project Administration Handbook for Civil Engineering Works

2022 Edition

AMENDMENT NO. 5/2024

CHAPTER 1 PROJECT PLANNING

PARAGRAPH 1 OVERVIEW

- (a) Para. 1.3 **Replace “Project” with “Works” in the beginning of the first sentence of the last paragraph.**

Replace “for submission to DEVB” with “and publish such forecast information on the respective website of their departments” in the first sentence of the last paragraph.

Add “for reference by any interested parties (e.g. consultants and contractors)” at the end of the first sentence of the last paragraph.

Add “website of DEVB will include (i) hyperlinks to the” after “The” in the beginning of the second sentence of the last paragraph.

Replace “will be consolidated and uploaded on the website of DEVB for reference by any interested parties (e.g. consultants and contractors)” with “published on websites of individual works departments and (ii) forecast information under the purview of the relevant non-works departments” in the second sentence of the last paragraph.

Add “in DEVB’s website” after “The link to access the forecast information” in the third sentence of the last paragraph.

CHAPTER 3 LAND MATTERS

PARAGRAPH 4 SUBSIDIARY PROCEDURES FOR PROVISION OF LAND

- (b) Para. 4.18 **Replace “Stage I” with “1 and Stage 2A” after “ – Stage” in the first paragraph.**

Delete “the” before “Map No.1” in the first paragraph.

Replace “of ETWB TCW No. 28/2003” with “(see Appendix 4.31 of Chapter 4) (Subsumed with amendments from ETWB TCW No. 28/2003)” after “Map No. 1” in the first paragraph.

Replace the last sentence of the first paragraph “See ETWB TCW No. 28/2003 for details.” **with** “Details refer to Appendix 4.31 of Chapter 4”.

Delete “the” before “Map No. 2” in the last paragraph.

Replace “of ETWB TCW No. 28/2003” with “(see Appendix 4.31 of Chapter 4)” after “Map No. 2” and “Map No. 3” in the last paragraph.

CHAPTER 4 PROJECT DESIGN AND ESTIMATES

PARAGRAPH 4 GUIDELINES AND POLICIES RELATED TO DESIGN

(c) Para. 4.4 **Add “and Stage 2A” after “Stage 1” in the second last paragraph.**

Replace “of ETWB TCW No. 28/2003” with “in Appendix 4.31 (subsumed with amendments from ETWB TCW No. 28/2003)” after “Map No. 1” in the second last paragraph.

Replace “in the TCW” after “‘Protection Area’ defined in” and “ETWB TCW No. 28/2003” after “in accordance with” with “Appendix 4.31” in the second last paragraph.

APPENDICES

(d) Appendix 4.31 **Add the new appendix enclosed to this Amendment.**

CHAPTER 5 CONTRACT DOCUMENTS

PARAGRAPH 6 SPECIFICATION

(e) Para. 6.2 **Replace “Stage I” with “1 and Stage 2A” after “Harbour Area Treatment Scheme (HATS)” in item (xxxv).**

Replace “ETWB TCW No. 28/2003” with “Appendix 4.31 of Chapter 4 (subsumed with amendments from ETWB TCW No. 28/2003)” after “reference should be made to” in item (xxxv).

**Technical Secretariat Unit
Civil Engineering and Development Department
2 August 2024**

**APPENDIX 4.31 PROTECTION OF HARBOUR AREA TREATMENT SCHEME
STAGE 1 AND STAGE 2A SEWAGE TUNNELS
(Subsumed with amendments from ETWB TCW No. 28/2003)**

Background

1. A key component of the Harbour Area Treatment Scheme or HATS (formerly known as the Strategic Sewage Disposal Scheme or SSDS) Stage 1 and Stage 2A is the construction and operation of a deep tunnel system to convey the sewage from fifteen existing preliminary treatment works in Kowloon and Hong Kong Island to the Stonecutters Island for further treatment. The project was implemented by DSD and the sewage tunnels are now being operated and maintained by DSD. The treated effluent is discharged through a sewage outfall tunnel at the Western Dangerous Goods Anchorage. The Stage 1 sewage tunnels are about 25 kilometres in length with diameters ranging from 1.2m to 5m and the Stage 2A sewage tunnels are about 21 kilometres in length with equivalent diameters¹ ranging from 0.9m to 3m. All the sewage tunnels are, in general, located at a depth more than 70m below the ground surface. The Stage 1 and Stage 2A sewage tunnels were completed and commissioned in December 2001 and December 2015 respectively. A sketch showing the alignment and profile of the sewage tunnels is attached as Map No. 1. The subsequent paragraphs lay down the procedure to be followed by all Works Departments for the circulation of proposals for construction works and ground investigation works in the vicinity of the sewage tunnels.

Sewage Tunnel Outer Protection Area for Construction Works other than Ground Investigation Works

2. A "construction protection boundary" for Stage 1 and Stage 2A sewage tunnel facilities is demarcated on plans numbered KCE/S/G/774A, 775A, 776A, 777A, 778A, 779A, 780A and 90806/STPA/2001B, 2002A, 2003A, 2004A. The "construction protection boundary" is generally 100m each side from the centreline of the sewage tunnels. The area within this boundary is called the "Sewage Tunnel Outer Protection Area". A complete set of these plans has been deposited with all Works Departments and also with the Buildings Department and the Housing Department.
3. Other than the exceptions allowed in Paragraph 13 below, no construction work is to take place within the Sewage Tunnel Outer Protection Area unless the proposals have first been forwarded to DSD and GEO for agreement and the departments proposing the construction works have confirmed to DSD that any measures necessary to protect the sewage tunnels as may be stipulated by DSD have been or will be complied with.

Sewage Tunnel Protection Area for Ground Investigation Works

4. The "ground investigation protection boundary" for sewage tunnel facilities is generally 50m each side from the centreline of the sewage tunnels. The area within this boundary has been officially designated as the "Sewage Tunnel Protection Area" (STPA) and is shown on plans numbered KCE/S/G/765C, 766C, 767C, 768C, 769C, 770C, 771C and 90806/STPA/1001B, 1002B, 1003B, 1004B for Stage 1 and Stage 2A sewage tunnel

¹ The sewage tunnels from North Point to Sai Ying Pun and from Aberdeen to Sai Ying Pun consist of twin oval pipes. The sewage tunnel from Ap Lei Chau to Aberdeen consist of twin circular pipes. The largest sewage tunnel from Sai Ying Pun to Stonecutters Island consist of single circular pipe of 3m in diameter.

facilities. A complete set of these plans has been deposited with all Works Departments and also with the Buildings Department and the Housing Department.

5. Other than the exceptions allowed in Paragraph 13 below, no ground investigation works is to take place within the Sewage Tunnel Protection Area unless the proposals have first been forwarded to DSD and GEO for agreement and any measures necessary to protect the sewage tunnels as may be stipulated by DSD are complied with.

Procedures

6. For public works or housing projects proposed by Works Departments or the Housing Department, it is the responsibility of the relevant Department to check whether any part of the project falls within the Protection Areas and, if so, to forward the relevant proposals to DSD and GEO for comment/agreement.
7. While DSD is responsible for vetting and agreeing to proposals which may affect the sewage tunnels, GEO will provide specialist advisory services to DSD for the appraisal of submitted proposals based on the standards and requirements mentioned in this Circular. It is therefore necessary to submit the proposals for works to be carried out within the protection boundary to both DSD and GEO. Detailed submission requirements are described in Paragraphs 8 and 9 below.
8. Submissions to DSD and GEO shall include all relevant drawings, an explanatory memorandum explaining the scope and programme of the proposed works, ground investigation reports together with an assessment report to assess the effects of the proposed works on the sewage tunnel and any further information as may be required by DSD/GEO. Submissions to DSD shall be addressed to the Chief Engineer of the District Division of DSD in which the works lie. The geographical areas covered by these Divisions, designated as Hong Kong and Islands, and Mainland South Divisions, are shown on the attached Map No. 2. Submissions to GEO shall be addressed to the Chief Geotechnical Engineer of the District Division of GEO in which the works lie. The geographical areas covered by these Divisions, designated as Island, Mainland East and Mainland West Divisions, are shown on the attached Map No. 3.
9. For projects where geotechnical submissions are required under the relevant circulars, the assessment report on the effects of the proposed works on the sewage tunnel shall preferably be submitted together with the geotechnical submission to facilitate coherent consideration under the project. For avoidance of doubt in these cases, the submitter should indicate that the submission of the assessment report to GEO is made under this circular.
10. Submissions shall be sent to DSD direct with a copy to GEO at the same time and at an early stage since additional information may be required to assess the proposals properly. GEO shall provide DSD with comments on geotechnical conditions and protective measures to be complied with by the project proponent for the consideration of DSD within 21 days of receipt of the submission. DSD shall reply to a submission incorporating GEO's comments where appropriate as quickly as possible and in any case within 28 days of receipt of the submission, either agreeing to the proposals with or without conditions, or stating why they are not agreed.

Technical Notes for Guidance

11. The "Technical Notes for Guidance in Assessing the Effects of Construction/Ground Investigation Works on Harbour Area Treatment Scheme Stage 1 and Stage 2A Sewage Tunnels" attached as Annex A to this Appendix provides guidance on the measures and requirements likely to be stipulated to protect the sewage tunnels and further details on the requirements of submissions to DSD and GEO.
12. The Technical Notes are for guidance only, and in case of doubt as to whether any proposed works will affect adversely the sewage tunnels, DSD and GEO must be consulted.

Exemptions

13. The above procedures do not apply to the following works:
 - (a) Road opening, road and highway structure maintenance where piling works are not involved, and road pavement construction.
 - (b) Excavation works or trial pits on land within a depth of 10m and is not closer than 30m from the nearest point of any HATS sewage structure such as drop shafts, connecting conduits and approach chambers. In case of doubts as to the separation from these sewage structures, DSD should be consulted.
 - (c) Maintenance dredging and minor marine maintenance works at locations other than the Stage 1 Outfall at the Western Dangerous Goods Anchorage provided that the dredging or excavation level is not more than 5m below the base of the existing marine deposit.
 - (d) Landscaping and planting.
 - (e) Erection of street lighting, shallow footing construction for minor works, laying and maintenance of underground utility services and water mains within a depth of 10m, except where piling works are involved.
 - (f) Upgrading or hazard mitigation works, maintenance and urgent repairs to slopes, including natural hillsides.
 - (g) Emergency repairs of existing underground utility services, such as water mains, sewers, drains and highway structures.

**Technical Notes for Guidance in Assessing
the Effects of Construction /Ground Investigation Works
on Harbour Area Treatment Scheme Stage 1 and Stage 2A Sewage Tunnels**

These technical notes apply to works situated on or adjacent to the alignment of the Harbour Area Treatment Scheme Stage 1 and Stage 2A sewage tunnels.

General

2. “Sewage tunnel” means an underground tunnel and associated underground structures for the transfer of sewage. A shaft connecting to a sewage tunnel is part of the sewage tunnel. Drawings showing details of the sewage tunnels are available from the relevant District Divisions of DSD. The extent of a shaft in soil is defined as the external shaft diameter; in rock it is defined as the internal diameter plus 2.5 metres each side. DSD should be consulted if there is any query concerning the route and extent of sewage tunnels.

3. Shafts of sewage tunnels are located within permanent land allocations to DSD. Tunnels constructed or to be constructed between these shafts are generally deep with at least 30 metres of rock cover except for both ends of the tunnel section between Ap Lei Chau Preliminary Treatment Works and Aberdeen Preliminary Treatment Works which are under soil or shallow rock cover. Most of the construction works on the ground surface will not have any significant effect on sewage tunnels and no restrictions on these works will be necessary.

4. The main risks of damage to sewage tunnels arise from either site formation or foundation works or tunnel/cavern works constructed immediately adjacent to shaft sites or from boreholes, wells, shafts, tunnels, grouting or other deep works constructed close to sewage tunnels. There is also a risk from ground or marine investigation works for a project requiring deep boreholes close to the sewage tunnels.

5. For the purposes of these notes the term “rock” is defined as Grades I, II and III rock material as classified in Table 4 - Classification of Rock Material Decomposition Grades - in Geoguide 3 (Guide to rock and soil descriptions) published by the Geotechnical Engineering Office. The term “soil” is defined as Grades IV, V and VI rock material (also classified in Geoguide 3), reclamation materials, and marine and alluvial deposits.

6. Leakage of sewage and the migration of gas from or into sewage tunnels poses health and safety risks. These risks must be evaluated when considering any proposed works near sewage tunnels, especially in respect of any dewatering works where there is the potential for the migration of hazardous substances in the groundwater.

Site Formation or Foundation Works or Tunnel/Cavern Works

7. Where construction works (including site formation, foundation works or excavation for basements, shafts, tunnels, cavern and the like) other than ground investigation works are proposed within the area as described in Paragraph 2 of this Annex, the effects of such works shall be within the following limits:

- (a) The vertical or horizontal pressure on any sewage tunnel structure in soil due to the above operations (including filling and dewatering) and due to additional loads transmitted from foundations (including loads arising during construction) shall

not be varied by more than 20kPa or by 5% of the total overburden pressure for structures at depths greater than 20m. For sewage tunnel structures in rock, where it is not possible to assess the change in ground pressure due to the above operations, the hydrostatic pressure shall not be increased or decreased by more than 50kPa.

- (b) Differential movement resulting from the works shall not produce a calculated final diametric distortion exceeding 0.1% of the shaft or sewage tunnel internal diameter and the calculated total movement in any plane shall not exceed 20mm.
- (c) The peak particle velocities at any sewage tunnel structures resulting from blasting (where permitted) or from driving or withdrawing of piles or any operation which can induce prolonged vibration shall not exceed 25mm/sec for blasting and 15mm/sec for other operations.
- (d) No holes or excavations shall be sunk or excavated within a distance of 3m from any point of any sewage tunnel structure without prior agreement by DSD and GEO for the works and the method to be employed.
- (e) No pile, foundation, well, soil nail, horizontal drain, or rock bolt/dowel shall be driven or constructed within a distance of 3m in any plane of any point of any sewage tunnel structure.
- (f) Any part of a ground anchor and /or other geotechnical installation shall be more than 3m from any part of any sewage tunnel structure.

8. Proposals for monitoring the effects on sewage tunnels shall be submitted, when required, to DSD and GEO before works commence and subsequent data together with interpretation shall be submitted to DSD and GEO for the duration of the works. Where the proposed works or any part of the proposed works shall come within a distance of **10m** from any point of any sewage tunnel structure, the submission shall also include detailed method statements on the method to be employed for constructing the proposed works and for monitoring the alignment/depth of the proposed works.

Ground Investigation Works

9. Where ground investigations are proposed within the area as described in Paragraph 4 of this Annex, it is necessary for the following to be submitted to DSD and GEO:

- (a) details of the exploration and locations of the proposed exploration holes, field testing or instrumentations relative to sewage tunnels;
- (b) proposed depth of holes, pits, trenches, field testing or instrumentation; and
- (c) a method statement for checking and monitoring the alignment of holes when the minimum distance from a hole to any point of a sewage tunnel is less than 50m should holes be sunk to a depth within 3m from the highest point of the sewage tunnels.

10. Any proposal will also be judged against the following technical guidelines :

- (a) The vertical and horizontal pressure on any sewage tunnel structure in soil due to ground investigation works including field testing such as plate load test, pressuremeter test, packer test or any operation should not be increased or decreased by more than 20kPa or by 5% of the total overburden pressure for structures at depths greater than 20m. For sewage tunnel structures in rock, where it is not possible to assess the change in ground pressure due to the above operations, the hydrostatic pressure shall not be increased or decreased by more than 50kPa.
- (b) The peak particle velocities at any sewage tunnel structure resulting from -
 - (i) artificial shocks generated either by the detonation of explosives or a mechanical blow at ground surface or at depth within a hole should not exceed 25mm/sec; and
 - (ii) percussion drilling, hammer drilling or any operation which can induce prolonged vibration, should not exceed 15mm/sec.
- (c) The method to be employed for sinking/excavating deep holes and for monitoring the hole alignment/depth to ensure that no hole is within a distance of 3m from any point of any sewage tunnel structure.

Dewatering Works and Wells

11. Assessment shall be made regarding the leakage of sewage and the migration of gas in respect of all dewatering and well proposals within 100 metres of sewage tunnels. Monitoring proposals shall be submitted to DSD and GEO for the duration of the dewatering or extraction.





