

5.8 Consideration of Deep Cement Mixing for Seawalls Foundation

- 5.8.1.1 The site trial on DCM is recommended to carry out in one of the non-critical seawall sections. The constraints to construction timeframe would be less. The possible locations for the trial would include the seawall for Cha Kwo Ling Reclamation, and the seawall for the non-critical portions of Hoi Sham Reclamation work (ie Hoi Sham Reclamation other than that for Central Kowloon Route Construction and other than the bund for gas facilities reprovisioning). The exact locations for the trial, which is likely to have less programme implication, would be selected in the detailed design stage.
- 5.8.1.2 If the site trial results confirm the feasibility of the method, DCM will be carried out in full scale for that section of seawall, thus obviating the need for dredging for foundation purpose. In the event that DCM is not suitable for applying in the SEKD, minimum dredging for sediment treatment may still be required in accordance with the methodology described in the preceding sections.

5.9 Impacts Summary

- 5.9.1.1 Three reclamation options including the no dredged, dredge for *ex-situ* treatment and minimum dredged reclamation options have been proposed in this section. It has been demonstrated that these reclamation options are technically feasible.
- 5.9.1.2 The vertical sea wall is usually constructed with large concrete blocks, filled with sand and founded on dredged seabed. The soft materials at the base may have to be removed to ensure the stability of the sea wall. The sloping sea wall, in its simplest form, is usually constructed with quarry-run rockfill core with blocks at the seaward side for erosion protection. The marine deposits are dredged to provide a suitable foundation. In both cases, despite the removal of the soft marine deposits, stability may remain a problem due to trapped marine deposit beneath the reclamation, giving weak planes for slip surfaces; and inadequate shear strength in the alluvial clay.
- 5.9.1.3 The potential stability problems are increased with the recent Government policy to minimise the amount of dredging and consequent sea disposal of contaminated marine deposits. Ground treatment would be required if the marine deposits were to be left in place. In addition, treatment to the softer alluvium deposits may also be required.
- 5.9.1.4 Breakwater structures, unlike sea walls, do not require retaining reclamation fill. However, they are heavy structures subject to significant wave loading. Ground treatment may still be required if the structure were to be founded on the soft marine deposits or alluvium deposits.
- 5.9.1.5 Cross-sections from typical geology at Hoi Sham and KTAC have been chosen and slope stability analyses have been carried out to determine if the marine deposits will pose any stability problems. Although short-term undrained shear strength of the marine and alluvial clays were not provided in the Final Geotechnical Report of the SEKDFS, typical values were adopted using values from the Chap Lap Kok reclamation. The results show that dredging is essential to provide the required stability against slip failure during reclamation and surcharging from an engineering point of view.
- 5.9.1.6 Based on the above considerations, the use of vertical drains and surcharging is recommended for general reclamation. Full dredging will be carried out in the areas where sea wall, breakwater and tunnel will be constructed. The proposed rock bund at Hoi Sham will also be dredged to provide a stable ground condition for supporting the gas main. Ground investigation will have to be carried out in the dredged zones after reclamation to determine if full dredging has been achieved. Settlement Plates and extensometers will be installed in the