Civil Engineering Department

Green Island Reclamation (Part) - Public Dump

Environmental & Traffic Impact Assessment

Executive Summary Report

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CONSULTING ENGINEERS

in association with
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British Maritime Technology
Hydraulics and Water Research Asia Ltd
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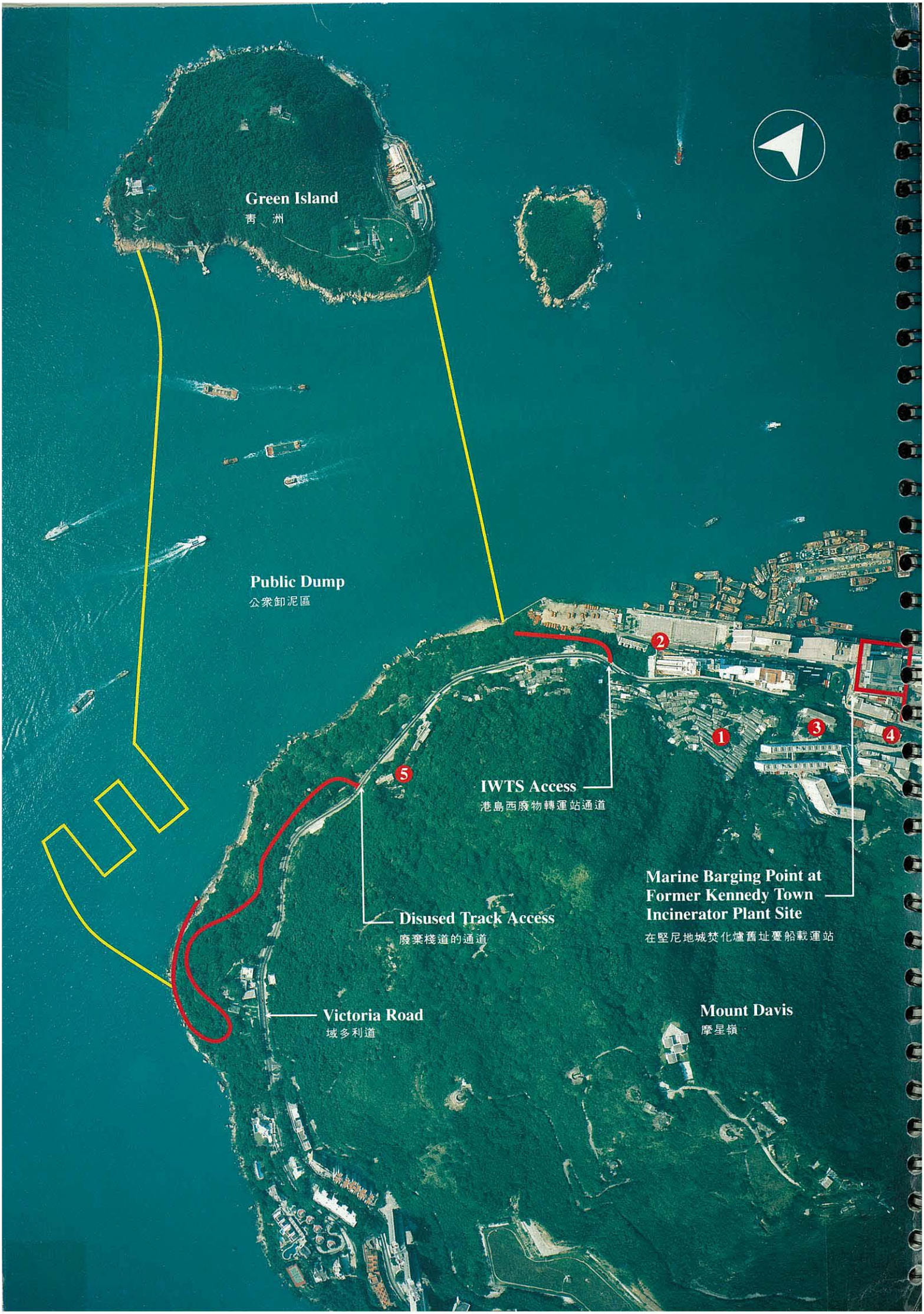

Green Island
青 洲
Public Dump
公衆卸泥區
IWTS Access
港島西廢物轉運站通道
Marine Barging Point at
Former Kennedy Town
Incinerator Plant Site
在堅尼地城焚化爐舊址臨船載運站
Disused Track Access
廢棄棧道的通道
Victoria Road
域多利道
Mount Davis
摩星嶺
1
2
3
4
5

PART I

Environmental Impact Assessment

1.0 INTRODUCTION

1.1 Study Context

1.1.1 Between 1988 and 1992, the Green Island Reclamation Feasibility Study commissioned by the Territory Development Department recommended the Green Island Reclamation (GIR) which is situated in the Sulphur Channel between Hong Kong Island and Green Island.

1.1.2 In March 1992 the Land Development Policy Committee endorsed a public dumping strategy formulated by the Civil Engineering Department's (CED's) Fill Management Committee. In the strategy, it was recommended that a part of the proposed GIR should be advanced for the purpose of receiving surplus construction materials suitable for public dumping.

1.1.3 This part of the proposed GIR is known as the Green Island Reclamation (Part) - Public Dump (GIRPD) which has a potential capacity of about 7 million cubic metres over a period of 7 years. It will provide the only facility for public dumping on Hong Kong Island in the period 1996 to 2002 and is therefore a key component of Government's public dumping strategy.

1.1.4 In August 1993 the Director of Civil Engineering commissioned Scott Wilson Kirkpatrick (Hong Kong) Ltd to assess the environmental and traffic impacts arising from the proposed GIRPD. Other issues involved identifying suitable road access from Victoria Road and the use of a marine barging point at the de-commissioned Kennedy Town Incinerator Plant site.

1.1.5 As a result of the Task Force on Land Supply and Property Prices, which identified two Residential R(B) sites along one of the preferred access options, the preferred road access options are currently being re-considered under a separate study. In the event of road access being unavailable, the use of one or more marine barging points could be adopted as a fallback measure.

1.2 Study Area

1.2.1 There are several sensitive receivers in the vicinity of the proposed GIRPD which have the potential to be affected by the development. These are shown as numbers 1 to 5 on the photograph on the back of the front cover. The major one is the Mount Davis Cottage Area which is administered under the control of the Housing Department (number 1). Others include a residential building Serene Court, a recreation area and Old Folks Home at the end of Sai Ning Street (number 2), the Chung Sing Benevolent Society School on Victoria Road (number 3), the Kennedy Town Jockey Club Clinic and St Lukes Settlement on Victoria Road (number 4), and the Sam Kindergarten in the Mount Davis area located further west along Victoria Road (number 5). Other proposed projects in the vicinity include residential development to the seaward side of Victoria Road, the Mount Davis Sewage Treatment Works and the Island West Transfer Station.

2.0 ENVIRONMENTAL ASSESSMENT

2.1 Scope of Assessment and Key Issues

2.1.1 The scope of the study was defined and all available background information reviewed to identify key environmental issues associated with the construction, operation and post-completion phases of the public dump. Key environmental issues identified were:

- noise impact
- air quality impact
- water quality and dredged sediments
- sewerage impact
- marine ecology
- terrestrial ecology and
- visual impact.

2.1.2 An assessment of impacts from each of the key environmental issues identified was undertaken and, where necessary, possible mitigation measures were recommended.

2.2 Noise Impact

2.2.1 Noise impacts on the Mount Davis and the Kennedy Town areas adjacent to the public dump are likely to result from the construction of the access road and seawall, the dumping operations, and road and marine traffic associated with public dump activities.

Public Dump

2.2.2 The assessment indicates that activities arising from the construction and operation of the public dump will create a noise impact below the day-time construction noise criteria of 75 dB(A) at most nearby sensitive receivers, albeit marginally exceeded at Western Kennedy Town. The topography of Mount Davis and the existing high-rise industrial buildings at Kennedy Town will shield many sensitive receivers from the reclamation. No concrete batching nor rock crushing plant will be allowed on site. However, any stockpiling and breaking down of oversized material should be located at the southern extremity of the reclamation so that topography provides an effective noise barrier to most sensitive receivers. Good site practices to minimise noise are recommended.

2.2.3 Recommendations were provided for the selection of a dedicated access road to the proposed GIRPD from Victoria Road. The preferred road options are being re-considered under a separate study as mentioned in Section 1.1.5. To reduce noise impacts on sensitive receivers in close proximity to either road appropriate mitigation measures in the form of noise barriers can be adopted. The lengths and types of noise barriers will be subject to detailed design.

2.2.4 However, similar mitigation measures for increases in traffic noise on public roads as a result of public dump traffic were considered and found to be impracticable and ineffective. Therefore, other measures such as traffic management schemes will reduce the dump-related traffic flows on public roads and thus the extent of the noise impacts.

Marine Barging Point

2.2.5 Noise impact assessment identified construction activity as the major noise source. Impacts associated with the operation of the facility are likely to be minor, given the existing screening by the bus workshops and the distance between the facility and adjacent sensitive receivers. Noise impacts associated with traffic serving the barging point are minor, and would only increase noise levels marginally.

2.3 Air Quality Impact

Public Dump

2.3.1 The dust impact assessment revealed that dust emissions from on-site activities can be mitigated to levels within Environmental Protection Department's (EPD's) Air Quality Objectives (AQOs) and that sensitive receivers are unlikely to be adversely affected by particulate levels. Dust mitigation measures include surface dampening, control of vehicle speed/movement and coverage of loose material. Even though no concrete batching nor rock crushing plant will be allowed on site, any activities related to stockpiling and breaking down oversized material should be sited at the southern extremity of the reclamation away from the nearby police quarters. Enclosures could be used to reduce dust emissions.

2.3.2 Dust monitoring should be undertaken to ensure that EPD's - AQOs and guidelines are not exceeded.

2.3.3 Predicted vehicle exhaust emissions from public dumping vehicles were found to be insignificant.

Marine Barging Point

2.3.4 Dust concentrations will be most significant during construction but will still be within acceptable limits at the nearest sensitive receiver. Actual dust concentrations can be reduced substantially by limiting the working area of the site and implementing dust suppression measures (eg surface dampening and loose material coverage).

2.3.5 During operation, dust generated by the handling and tipping of public dumping material can be minimised by the partial enclosure of the tipping operation to eliminate wind drift.

2.3.6 Increases in ambient vehicle pollutant concentrations from traffic associated with the facility alone will be negligible.

2.4 Water Quality and Dredged Sediments

Public Dump

2.4.1 Available background data on water and sediment quality was reviewed. Near Green Island water quality, with the exception of nutrients and total inorganic nitrogen (TIN), was found to be compliant with EPD's water quality objectives (WQOs) for the Southern and Western Buffer water control zones (WCZs). In Victoria Harbour, the existing TIN and bottom-layer dissolved oxygen levels would not comply with the WQO if those of the Southern and Western Buffer WCZs were applied. The maximum suspended solids concentration in the harbour exceeds target guidelines for flushing water.

2.4.2 Sediment surveys concluded that surface sediments in the proposed GIRPD area were uncontaminated meaning that no special dredging and disposal techniques would be required for their removal. Nevertheless, it is recommended that careful dredging techniques are adopted and silt curtains around dredgers used in order to minimize adverse environmental impacts as far as possible.

2.4.3 There are no sensitive receivers in the vicinity of the proposed GIRPD and sediment plume modelling demonstrated that mariculture zones located at Ma Wan, Sok Kwu Wan and Lo Tik Wan, as well as the power station intakes at Tsing Yi and Lamma Island, are outside any significant sediment plume contour. Model results for both construction and operation stages show a plume radiating south-east/north-northeast with little movement through the Sulphur Channel toward Victoria Harbour. It is predicted that suspended solids concentrations at the seawater intake of the Kennedy Town salt water pumping station will not increase above background levels. If the measured flood tide concentration of suspended solids at the monitoring station offshore of the seawater intake increase by more than 10 mg/l above background levels, a silt screen should be installed around the seawater intake. Other existing and proposed seawater intakes in the area will remain largely unaffected.

2.4.4 Sediment deposition rates are not expected to adversely affect benthic fauna beneath the sediment plume. Additional oxygen demand imposed by dispersed sediment resulting from dredging is unlikely to have any significant effect on water quality.

2.4.5 The construction and operation of the proposed GIRPD is not expected to give rise to unacceptable deterioration in water quality. Present surface water discharges from Victoria Road should be diverted to the south of the western seawall.

2.4.6 To prevent pollution of marine waters by floating debris during public dumping, it is recommended that floating booms with skirts and scavaging sampans be used to retain floating timber and other debris around the dumping area. Accumulated material should be removed daily. Also recommended as additional safeguards during public dumping are the use of silt curtains, the early construction of the western seawall above the high water mark to enclose the dumping area and the restriction of bottom dumping from barges to rising tides to contain sediment plumes within the local area.

Marine Barging Point

2.4.7 It was established that dredging will not be required to obtain suitable marine access to the Marine Barging Point. Water quality impacts associated with construction are therefore likely to be minimal. Impacts during loading operations are likely to be limited to spilling of material overboard which, given that the material is suitable for acceptance in GIRPD and therefore uncontaminated, should not lead to significant detrimental effects other than to cause a local increase in suspended solids concentrations. Mitigation measures encouraging good working practice should be enforced.

2.5 Sewerage Impact

Public Dump

2.5.1 Available information indicates that only 30 to 50% of the sewage generated in the study area enters foul sewers, with the remainder entering the stormwater system. The hydraulic capacity of three foul discharges to be affected by the proposed GIRPD was determined and respective pollutant loadings were estimated. Two of these three discharges will need to be intercepted as part of the adjacent Belcher Bay Reclamation, and therefore only one of these discharges was used for water quality modelling work.

2.5.2 Five stormwater discharges would be directly affected. The feasibility of intercepting and diverting these southward towards the fast flowing waters at the western seawall to aid dispersion is recommended as a suitable semi-permanent measure.

2.5.3 To avoid unacceptable water quality impacts after completion of the reclamation, sewerage discharges should be intercepted, collected and diverted for treatment. It is recommended that oil/fuel interceptors be incorporated into the drainage system to prevent discharging accidental spillages on site to marine waters.

Marine Barging Point

2.5.4 No diversions of sewers or stormwater outlets are required and as such no sewerage impact is envisaged from the construction or operation of the Marine Barging Point. It is recommended that any staff mess facilities should be appropriately connected to the sewerage system.

2.6 Marine Ecology

Public Dump

2.6.1 Compared with similar habitats elsewhere in Hong Kong, the shores of Green Island to be affected by the proposed GIRPD do not have a biological community offering exceptional diversity and species richness. There are, however, a few notable features:

- A few species of gastropods which are becoming rare elsewhere in Hong Kong, because of human disturbance, can be found in small numbers here.
- Some mussel species dominant in the rest of Victoria Harbour do not appear to be abundant on Green Island.
- The average body sizes of the animals found on Green Island are significantly larger than those elsewhere in Victoria Harbour. This is especially noticeable for the gastropods and limpets. This feature of the shores is not shared by most other easily accessible shores in Hong Kong.

2.6.2 The translocation of a representative community of fauna from the affected shores to the unaffected north-west quarter of the island is recommended. Restrictions should be applied so as to prevent these northern shores from being used as storage areas for waste or construction materials during GIRPD works and, following completion, from being accessed unless for academic research.

2.6.3 Also during the GIRPD works, the subtidal community of the Sulphur Channel will be lost. However,the results of a separate study by CED's Fill Management Committee has shown that the overall importance of this community is small.

2.6.4 It is also concluded that the GIRPD will not result in impacts which would cause any noticeable adverse or unacceptable impacts on the inter-tidal biota in the vicinity of the works area.

2.7 Terrestrial Ecology

Public Dump

2.7.1 The flora of Green Island was found to be very rich in species, with an advanced succession comprising many woodland species. This is thought to reflect a lack of disturbance by fire and other factors. No rare species of flora were identified but one protected species was found.

2.7.2 The direct impacts resulting from the GIRPD works will be a loss of vegetation along the southern shores of Green Island and the loss of these shores as a foraging ground for the Reef Egret and other wader species. Indirect impacts following completion of the public dump will arise from increased human access to Green Island including the risk of fire, and invasion from predatory species.

2.7.3 Replacement planting of destroyed or damaged vegetation is required to be carried out on both Green Island and along the Hong Kong Island shoreline. To compensate for the loss of natural shoreline a large-boulder rocky shore is to be constructed on the reclamation with floating rafts and buoys provided close to shore as foraging posts for the birds. Other recommended mitigation measures including prohibiting open fires, smoking and the storage of flammable materials on the Island during the GIRPD works and prohibiting the temporary storage of construction materials and wastes other than within the works area.

2.7.4 In order to reinstate woodland coverage, any trees destroyed during development of the proposed GIRPD and access route should be replaced with native species, with the provision of nursing/pioneer species as appropriate. Aesthetically and/or ecologically important shrubs and trees should be fenced off for protection if they are exposed by the clearance of adjacent vegetation.

2.8 Visual Impact

Public Dump

2.8.1 The visual impact evaluation is based on the identification of key viewpoints to the proposed GIRPD. From the sensitive viewpoints on Hong Kong Island, the landform and vegetation of Mount Davis will screen much of the proposed GIRPD; only the area nearest to Green Island will be visible.

2.8.2 Most of the construction activities will be carried out by marine dredgers and barges. As most construction will take place below sea level, it will form a relatively minor feature within the context of the development. Marine construction activity is common in the waters around Hong Kong and is not considered to be a significant visual intrusion. It is recommended that any stockpiling and breaking down of oversized materials is located as close as possible to the existing shoreline to reduce visual impact from land-based sensitive receivers.

2.8.3 The visual impact of the later stages of development will be particularly significant from the higher viewpoints which look down on the reclaimed area. Screening a large scale reclamation such as this would not be possible. Ferry commuters will also be affected until the ferries are re-routed in the final stage of public dump operation.

2.8.4 The GIRFS established guidelines for elements that will be constructed as part of the development. Proposals were made to include a soft semi-rural/recreational edge in the design of the western seawall. It was also suggested that part of Green Island's existing, rocky shoreline could be retained. Provision should be made for their implementation; otherwise this could be considered to have a negative visual impact.

2.8.5 The construction of a temporary access road along the existing disused track could have a significant impact on the appearance of the lower slopes of Mount Davis below Victoria Road. The design and construction of any such access road should aim to minimise vegetation removal. A comprehensive landscape reinstatement programme should be adopted to mitigate the short and long-term visual impacts.

Marine Barging Point

2.8.6 Construction and operational visual impacts will be minimal. The prior demolition of the Kennedy Town Incinerator Plant will result in an overall visual improvement in the area.

2.9 Environmental Monitoring and Audit

2.9.1 To minimise environmental nuisance, environmental monitoring and audit requirements for dust, noise and marine water quality are defined for the project. Supervision and finalisation of the monitoring and audit process should be carried out by an independent consultant prior to commencement of works.

2.9.2 Linked to the monitoring activities, an action plan is necessary to ensure that if any significant impact occurs (either accidental or through inadequate implementation of mitigation measures on the part of the contractor), then the cause can be quickly identified and remedied, and the risk of a similar event re-occurring minimised.

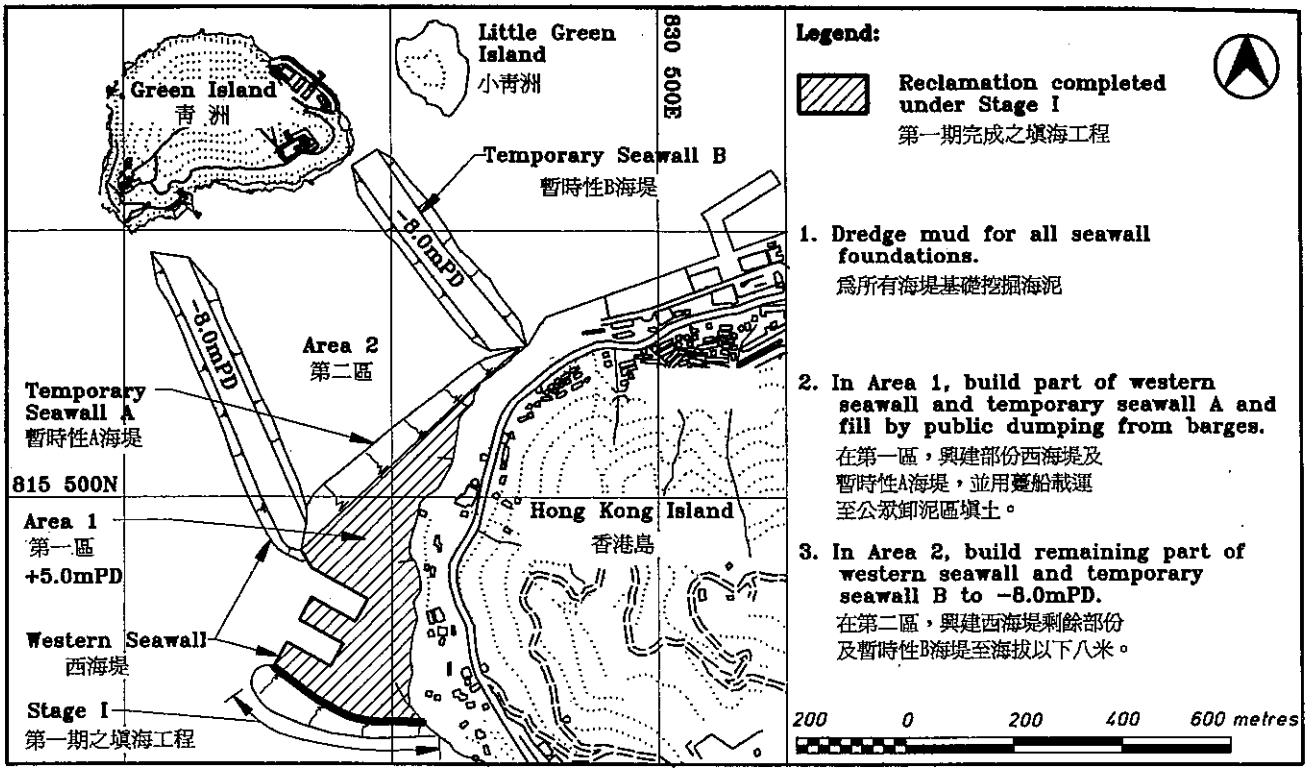
2.9.3 An Environmental Monitoring and Audit Manual which can form the basis of a monitoring programme and action plan has been prepared for this purpose.

2.10 Conclusions : Environmental Assessment

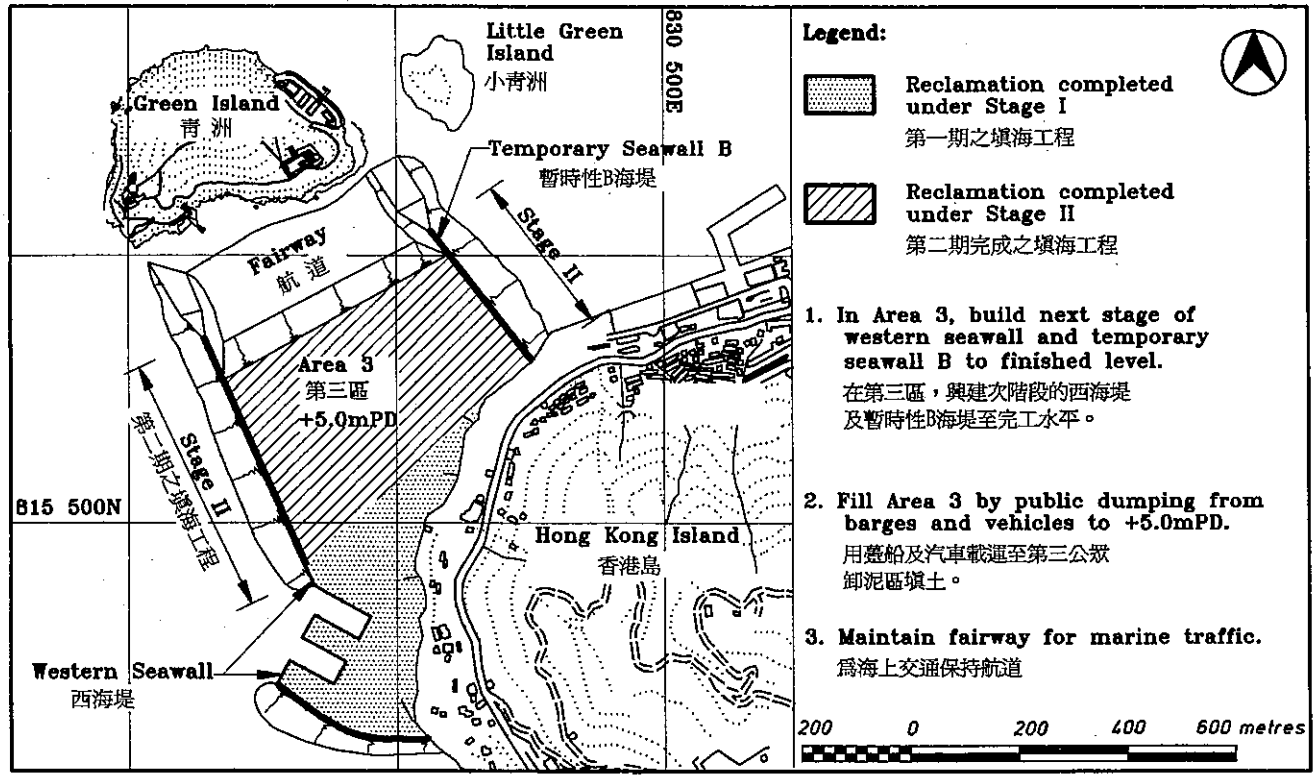
2.10.1 Despite the predominantly urban environment, there are few sensitive receivers expected to be adversely affected by the construction and operation of the proposed GIRPD. The following mitigation measures are recommended:

- No concrete batching nor rock crushing plant will be allowed on site.
- Any proposal of stockpiling and breaking down oversized material should be located at the southern extremity of the reclamation in an area naturally shielded from most sensitive receivers.
- Dedicated access roads should be partially enclosed by noise barriers.
- Dust suppression measures should be enforced.
- Careful dredging techniques and silt curtains should be used during seawall construction.
- Public dump filling by bottom dumping from barges on rising tides and silt curtains and floating booms should be used.

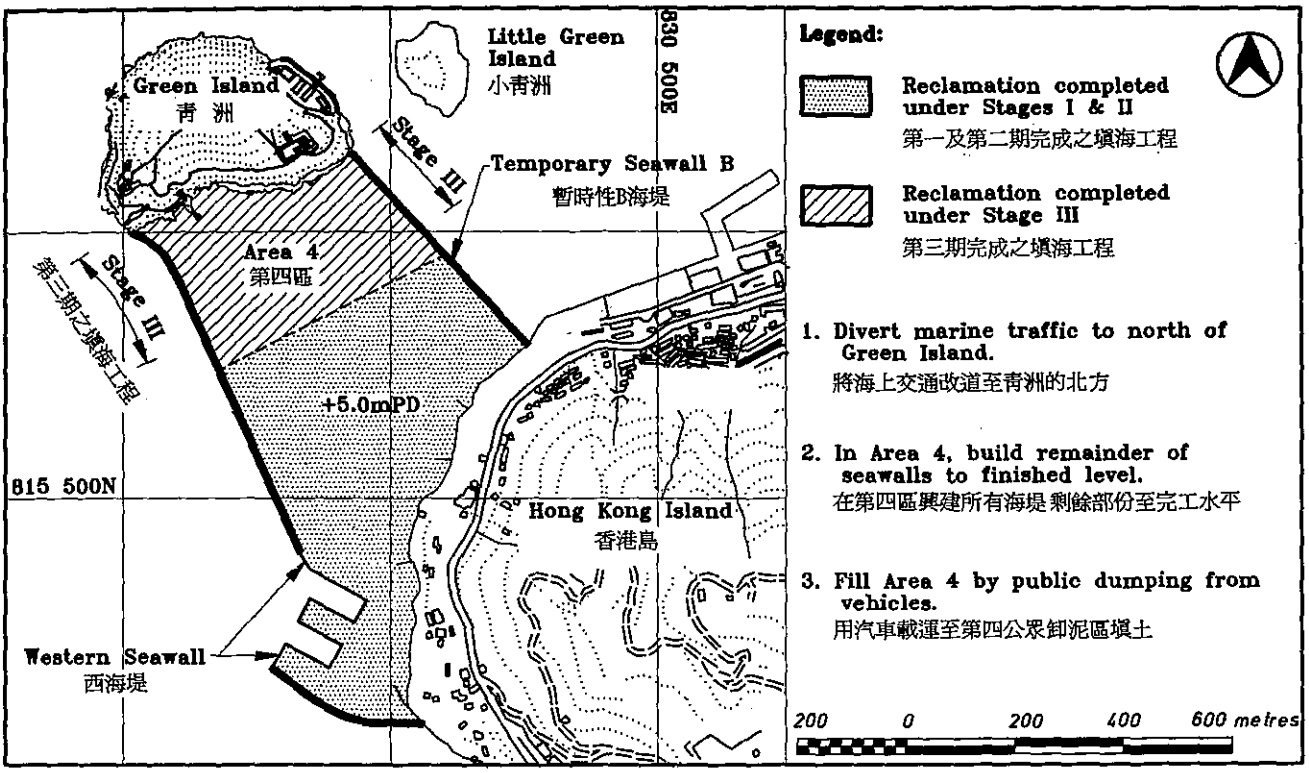
- The western seawall should be constructed above the high water mark as soon as possible to enclose the dumping area.
- Extended loading ramps should be used at the Marine Barging Point to avoid dredging.
- Before completion of the reclamation, five stormwater outlets should be diverted.
- Representative fauna community should be transplanted from the affected shores of Green Island to the north-west quarter of the island and the area accorded restricted access protection overseen by park wardens.
- Visual impact mitigation measures should be allowed for as established under the GIRFS and the Metroplan Landscape Strategy.



Stage I Works 第一期之填海工程



Stage II Works 第二期之填海工程



Stage III Works 第三期之填海工程

Item of Works	1995	1996	1997	1998	1999	2000	2001	2002	施工項目
ACCESS									通道
Site clearance for Marine Barging Point									爲駁船載運站整理地盤
Marine access via Marine Barging Point									海路經駁船載運站
Design and construction of road access									陸路通道的設計與建造
Road access open									陸路通道的啓用
STAGE I : Area 1 Works									第一期:在第一區施工
Western seawall to +6.0mPD									興建西海堤至海拔六米
Temporary seawall A to +5.0mPD									興建暫時性A海堤至海拔五米
Public dump filling to +5.0mPD									在公眾御泥區填土至海拔五米
STAGE I : Area 2 Works									第一期:在第二區施工
Western seawall to -8.0mPD									興建西海堤至海拔以下八米
Temporary seawall B to -8.0mPD									興建暫時性B海堤至海拔以下八米
STAGE II : Area 3 Works									第二期:在第三區施工
Western seawall to +6.0mPD									興建西海堤至海拔六米
Temporary seawall B to +5.0mPD									興建暫時性B海堤至海拔五米
Public dump filling to +5.0mPD									在公眾御泥區填土至海拔五米
STAGE III : Area 4 Works									第三期:在第四區施工
Western seawall to +6.0mPD									興建西海堤至海拔六米
Temporary seawall B to +5.0mPD									興建暫時性B海堤至海拔五米
Public dump filling to +5.0mPD									在公眾御泥區填土至海拔五米

Programme of Works 施工程序

第一部份

環境影響評估

1.0 引言

1.1 研究

1.1.1 一九八八年至一九九二年期間，由拓展署委託進行的青洲填土工程可行性研究建議在青洲填海區位於香港島及青洲之間的硫磺海峽進行填土工程。

1.1.2 土地發展政策委員會通過土木工程署填料管理委員會在一九九二年三月制訂的公眾卸泥策略。該策略提議把擬建的部分青洲填海區撥作公眾卸泥區用作接收剩餘建築材料。

1.1.3 建議的部份青洲填海工程名爲「青洲填海工程〔部分〕— 公眾卸泥區」，〔簡稱青洲公眾卸泥區〕其潛在容量約爲700萬立方米，使用期爲七年。該卸泥區將在一九九六年至二零零二年期間爲港島提供唯一的公眾卸泥設施，因此是政府的公眾卸泥策略的一個主要部分。

1.1.4 土木工程署署長於一九九三年八月委託史偉高顧問工程師評估由於該建議的公眾卸泥計劃而引致對環境及交通的影響。其他問題包括確定由域多利道通往該處的合適通路，及使用堅尼地城焚化爐舊址爲一個躉船載運站。

1.1.5 由於土地供應及物業價格專責小組確定兩個住宅〔乙類〕場址位於其中一個優選通路，優選通路現時被另一個研究考慮當中，當道路通道還未有時，利用一個或多個躉船載運站將是退一步的措施。

1.2 接受研究地區

1.2.1 在擬建的公眾卸泥區附近有幾個可能很容易受到此項發展工程影響的地方，參閱封面內頁照片上編號一至五。其中一個主要地點爲摩星嶺平房區〔編號一〕，該處的管理由房屋署監管。其他地點包括住宅大廈西寧閣、位於西寧街尾的一個康樂場地及置地公司域多利道宿舍〔編號二〕、位於域多利道的鐘聲慈善社學校〔編號三〕、位於域多利道的堅尼地城賽馬會醫療所及摩星嶺街坊福利會〔編號四〕及位於摩星嶺區沿域多利道更西面之處的潔心幼稚園〔編號五〕。其他建議在附近進行的工程計劃包括在域多利道靠海的一邊進行住宅發展計劃、建造摩星嶺污水處理廠及港島西廢物轉運站。

2.0 環境評估

2.1 評估範圍及主要問題

2.1.1 本研究的範圍只限於確定發展計劃在施工、運作及完成後階段有關的主要環境問題，而所有獲取的資料亦以此爲目的作檢討。經確定的主要環境問題爲:

- 噪音影響
- 空氣質素影響
- 海水質素及挖掘沉澱物
- 污水排放系統的影響
- 海洋生態
- 陸地生態
- 景觀影響

2.1.2 經確定的每一項環境問題所造成的影響已接受評估，有必要的話，會建議施行緩解措施。

2.2 噪音影響

2.2.1 摩星嶺及靠近公眾卸泥區的堅尼地城的噪音影響多數來自通道和海堤建造、卸泥作業和與公眾卸泥操作有關的道路和海上之交通。

公眾卸泥區

2.2.2 評估結果顯示，有關由興建和操作公眾卸泥區的作業對大部分附近容易受到影響的地方所造成的噪音影響低於日間噪音標準75分貝〔A〕，但對堅尼地城西部的影響則僅超出這個標準少許。摩星嶺的地勢，以及在堅尼地城的現有高聳的工業大廈，將會使許多容易受到影響的地方免受填海區的影響。工地範圍內不准設立混凝土配料機和石料打碎機。特大物料的堆放及打碎工作，須在填海區最南端進行，以便該處的地勢可以有效地阻擋噪音。良好的工地作業慣例來減低噪音是必須的。

2.2.3 有關由域多利道通往青洲公眾卸泥區的通路問題，當局已提出建議以供選擇。正如1.1.5節所述，優選通路方案正被增補的研究作更進一步的評估。可以採用道路緩解措施如隔聲屏障來減低易受影響地方的噪音影響。至於隔聲屏障的長度及種類則須要詳細設計。

2.2.4 不過在現存的道路網上利用類似的緩解措施來減低因公眾卸泥的交通而增加的道路噪音是不實際和無效的。因此，其它措施如交通管理方案將可減少通往卸泥區的交通流量以至其噪音的影響。

躉船載運站

2.2.5 噪音評估確定建築活動爲噪音的主要來源。鑑於現時有中巴維修廠作爲屏障，而載運站設施與鄰近容易受影響的地方有一段距離，有關設施運作帶來的影響相信是輕微的。與來往躉船載運站的交通有關的噪音影響亦很輕微，只會把噪音水平提高少許。

2.3 空氣質素影響

公眾卸泥區

2.3.1 灰塵影響評估顯示，由工地範圍所散發的灰塵可予減至環境保護署的空氣質素指標水平而其他易受影響的地方將不大會有嚴重的粒子水平影響。灰塵消減措施包括濕潤表面、管制行車速度/移動範圍以及遮蓋鬆散的物料。工地內不准設立混凝土配料機和石料打碎機。此外，與弄碎過大物料及儲存物料相關的活動，應在填海區南端進行。又可以用圍罩來減少灰塵擴散。

2.3.2 有關方面須採取監測灰塵的措施，確保沒有超出環境保護署 - 空氣質素指標及準則。

2.3.3 根據預測，公眾卸泥車輛排放的汽車廢氣問題並不嚴重。

躉船載運站

2.3.4 在建造躉船載運站期間灰塵的濃度最嚴重，但即使在最接近的易受影響地區其情況仍屬於可以接受的範圍。藉著限制地盤的施工範圍以及實施抑制灰塵的措施〔例如在地盤灑水及遮蓋鬆散物料〕可以大量減低灰塵的實際濃度。

2.3.5 在躉船載運站運作期間，在傾卸作業時進行局部圍隔，可免灰塵隨風飄送，便能盡量減少因處理及傾卸公眾卸泥物料而產生的灰塵。

2.3.6 單就躉船載運站設施相關的交通會引致卸泥站附近增加車輛污染物的濃度而言，其影響是微不足道的。

2.4 海水質素及挖掘沉澱物

公眾卸泥區

2.4.1 本處已檢查所得到有關海水及挖掘沉澱物質素的背景資料。根據發現，在青洲附近的海水質素，除營養物和無機氮總量外，均符合環境保護署在南區及西區水質管制區的水質指標。在維多利亞港，如果應用南區及西區水質管制區的水質指標，其現存的無機氮總量及底層的溶解氧量便不能符合水質指標。海港內懸浮固體的最高含量超過沖廁用海水的目標準則。

2.4.2 沉澱物的測量結果顯示擬建的公眾卸泥區範圍內的表面沉澱物並未受到污染，意味無需使用特殊的疏浚技術來加以清除。然而最好採用小心的疏浚技術，並在挖泥船周圍使用沉澱物屏幕，從而盡量減少對環境造成不良影響。

2.4.3 在擬建的公眾卸泥區附近沒有容易受影響的地方，而沉澱物卷流模擬實驗顯示，位於馬灣、索罟灣及蘆荻灣的海產養殖場以及青衣與南丫島發電廠的引水口，均在主要沉澱物卷流等高線外。模擬公眾卸泥區的建造及運作結果顯示，一個向東南/東北偏北散發的沉澱物卷流沿硫磺海峽向維多利亞港作輕微移動。因此預測在堅尼地城海水抽水站的入口處的懸浮固體濃度不會超過背景水平。假如在抽水站入口處對開的監察站發現懸浮固體濃度於漲潮時比背景水平增加每公升10毫克或以上，便需要在該海水抽入口周圍設立沉澱物屏幕。該區其他現成及擬建的海水抽入口不會受到太大影響。

2.4.4 沉澱物的沉積速度預料不會對現時沉澱物卷流下面的海底動物造成不良影響。因挖泥而產生的分散沉澱物對氧氣的額外需求預料不大會對海水質素有顯著影響。

2.4.5 建議的公眾卸泥區在建造及運作時，預料不會令到水質惡化至不可接受的水平。現時由域多利道排放的明渠水需要改流至西海堤的南面。

2.4.6 爲免在公眾卸泥時漂浮垃圾污染海水，因此建議用附設陲腳的浮泡欄柵阻擋漂浮的木塊及其他瓦礫以免漂浮至卸泥區外。積累的物料必須每日清理。此外，作爲公眾卸泥時的額外保障措施，建議使用沉澱物屏幕，盡量提早興建西海堤至高潮位水平來圍繞卸泥區及限制躉船在漲潮時進行艙底傾卸的工作，把沉澱物卷流限制在當地範圍。

躉船載運站

2.4.7 經已確定的，是無需挖泥以獲取通往躉船載運站的海上通道。因此與建造躉船載運站有關的海水水質影響將會是最小的。在躉船卸泥時產生的影響僅限於傾卸的物料溢出落海的情形，這除了導致當地的懸浮固體濃度上升外，應該不會引起嚴重的惡果; 當然，傾卸的物料必須是適合公眾卸泥區的接收標準，亦即是未受污染的。能夠鼓勵良好作業方式的緩解措施必須被執行。

2.5 污水排放系統的影響

公眾卸泥區

2.5.1 已得的資料顯示，在接受研究地區內所產生的污水只有30%至50%流入污水渠，其他則流入雨水疏導系統。三條污水渠的去水能力及位置已被斷定，而其污染物數量亦已估計得到。其中兩條污水渠需要按照毗鄰卑路乍灣填海計劃而重新納入污水渠系統，因此在水質模擬研究中，只會研究那剩餘的一條污水渠的排放物。

2.5.2 將會受到直接影響的雨水渠有五條。根據建議，可以把這些雨水渠截斷然後向南導入西海堤湍急的水流以助擴散，作爲合適的〔半〕永久措施。

2.5.3 爲免填土工程完竣後水質影響不能符合標準，需要截斷污水渠，加以收集然後導往處理。根據建議，需要在排水系統安裝燃油或液體燃料的隔斷弇，以免公眾卸泥區發生意外洩漏時燃油/液體燃料流入海水。

躉船載運站

2.5.4 污水渠及雨水出口均無需改道，因此預計躉船載運站的建造及運作不會造成污水排放系統的影響。根據建議，任何地盤員工膳食設施應與污水排放系統銜接妥當。

2.6 海洋生態

公眾卸泥區

2.6.1 與香港其他類似的棲息地相較，將會受到擬建的公眾卸泥區影響的青洲海岸並沒有提供特別多種多樣及豐富品種的生物群落。不過，該處有一些值得注意的特徵:

- 該處有少量的軟體及貝殼類品種，它們在香港其他地方由於人爲的干擾而變得

罕見。

- 在維多利亞港其他地方數量眾多的一些貽貝類品種，在青洲則似乎並不多見。
- 在青洲發現的動物一般體積比在維多利亞港其他地方的動物大得多，尤其顯著的是軟體及貝殼類、如螺螄及 蜈。香港大部分容易到達的海岸均沒有這種特徵。

2.6.2 根據建議，可以把受影響而有代表性的動物群落移居到青洲西北面的地方。實施限制是爲了防止有人在建造該公眾卸泥區期間利用這些位於北面的淺岸作爲廢物及工程物料的儲存地方，及防止有人在公眾卸泥區工程完峻後進入該處，但進行學術研究的人員則除外。

2.6.3 在此工程期間，在硫磺海峽潮水下的生物群落將會消失。而且，由土木工程署填料管理委員會所進行的另一個研究結果顯示出此群落對整體的重要性是輕微的。

2.6.4 結論亦指出青洲公眾卸泥區不會對在工地附近的潮區生物有任何可見的不良或不可接受的影響。

2.7 陸地生態

公眾卸泥區

2.7.1 根據發現，青洲的植物品種繁多，先進的演替包括許多林木的品種。由此反映該處沒有受到山火及其他因素干擾。沒有發現罕有的植物品種，但有發現一種受保護的品種。

2.7.2 由青洲公眾卸泥區的工程所引致的直接影響是損失了青洲南面海岸線上的植物和這給岩鷺或濱鳥的天然覓食處。在公眾卸泥完工後的間接影響將是因人類增加到達青洲的次數而有機會引起的山火和獵物種類的入侵。

2.7.3 在青洲和沿香港島的海岸上進行種植替代損壞了的植物是必須的。由巨大的石塊在填海區所興建的石灘用來抵償消失的海岸線，而接近石灘設置的浮筏及浮筒可供給鳥類覓食棲息的地方。其它推薦的緩解措施包括在工程期間，禁止戶外生火、吸煙和存放易燃物體在島上和禁止在工作地區外存放臨時建築材料和廢物。

2.7.4 在發展建議的公眾卸泥區及通路時如有樹木遭受毀壞，必須用土產種屬替換，如果適用的話，還提供育苗/先鋒品種，藉以恢復林木植被。如果有些富美感及/或生態價值的灌木和樹木由於鄰近的植物被清除以致暴露於外，應以圍柵隔開保護。

2.8 景觀影響

公眾卸泥區

2.8.1 藉著確定可以看見公眾卸泥區的主要地點，便可評估公眾卸泥區對景觀的影響。由港島容易看見該公眾卸泥區的地點望過去，摩星嶺的地形及林木將遮蓋建議的公眾卸泥區不少地方; 只有最近青洲的地方可以爲人看見。

2.8.2 公眾卸泥區的建造活動大部分將會由挖泥船及躉船施行。由於建造活動大多在海面之下進行，因此只會在發展用地的環境內形成比較輕微的特徵。海上的建造活動在香港

附近的水域相當普遍，此項工作並未視爲對景觀造成重大影響。根據建議，特大的物料的堆放及打碎工作應盡量靠近現存的海岸線的地方進行，以減少對陸上容易受影響的地方所造成的景觀影響。

2.8.3 在發展計劃的稍後階段，俯瞰填土區的高處所受到的景觀影響尤其嚴重。要把這麼大幅的填土區遮蓋是沒有可能的。渡輪的乘客也會受到影響，直至在公眾卸泥區運作的最後階段渡輪改變航道爲止。

2.8.4 青洲填土工程可行性研究爲發展用地建設的設施奠定指引，建議西海堤設計應包括一個半鄉村式綠化/消閑活動設施，並且建議保留青洲現時的岩石海岸線。有關建議需要作好準備; 否則估計可能造成不良的景觀影響。

2.8.5 沿現時廢棄小徑建造一條臨時的通路，可以嚴重影響摩星嶺位於域多利道下面低處斜坡的外觀。這類通路的設計及施工應以盡量減少清除林木爲目的。一個綜合性的恢復綠地貌修復計劃應予以採納，以解短期及長期的景觀影響。

躉船載運站

2.8.6 由躉船載運站的建造至運作時所產生的景觀影響將會是很小的。而在此之前拆毀堅尼地城焚化爐的廠房將會改善該區的整體景觀。

2.9 環境監測及審核

2.9.1 爲盡量減低環境滋擾，當局會界定上述工程計劃的灰塵、噪音及海水質素的環境監測及審核。監測及審核程序的監督及落實方面，應在工程展開之前由獨立顧問負責進行。

2.9.2 在環境監測程序方面，現已訂定一系列所需行動，以確保一旦因意外或承建商未有採取足夠緩解措施而導致嚴重影響發生時，有關方面能盡快找出成因，並立即作出補救，務求盡量減低類似的意外事件再次發生的可能。

2.9.3 可成爲監測計劃及行動計劃的基礎的環境監測及審核手冊，經已擬備作這項用途。

2.10 結論：環境評估

2.10.1 雖然大部份是市區環境，預料有很少易受影響的地方如住宅、學校等，會受到擬建的青洲公眾卸泥區的建築工程及運作的不利影響。當局建議採取以下的緩解措施:

- 任何混凝土配料機和石料打碎機的設備，禁止在工地設置。
- 任何用作存放及弄碎過大物料的地方，應設在填海區的南端，以便與容易受影響的地方分隔。
- 有關通路應以隔聲屏障局部密封。
- 執行灰塵抑制措施。
- 在海堤建築工程進行期間，應小心採用挖泥技術及沉澱物屏幕。
- 在漲潮時，在公眾卸泥區內用艙底傾卸，並使用沉澱物屏幕及浮泡欄柵。
- 西海堤須要盡快興建至高潮位水平線來圍繞卸泥區。
- 應在躉船載運站使用擴展裝卸台，以避免挖泥。
- 在填海工程完成之前，應將五條雨水渠遷移。

- 有代表性的動物應從受影響的青洲島海岸遷移至島上西北區，並以限制通道形式加強保護，一切由公園督導員監察。
- 應根據青洲填海區可行性研究及都會計劃美化策略所制定一樣， 採取景觀影響緩和措施。

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