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Civil Engineering Development Department

Agreement No. 9/2011 Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study
SEA Report - Reclamation Sites (Executive Summary)

REP/98/01 | Rev 11 |
SEA REPORT - RECLAMATION (EXECUTIVE SUMMARY) V11 WITH CEDD MARKED UP.DOCX

1 Introduction

1.1 Project Background

To respond more flexibly to society's needs for land, it is Government's policy as announced in 2013 policy Address to develop new land extensively and build up an abundant "land reserve" that can more than meet the short-term demand. The reserve can be used to meet future demand in a timely manner.

Land demand is influenced by various factors, including demographic change, economic performance, property market, Government policy, social needs, public expectations and nature conservation, etc. These factors and their influence to the land demand are difficult to predict, especially in relation to the long-term demand. Owning to the scarce resources of developable land in Hong Kong, ever changing land demand and the long lead time required for land production, it is the prime objective of the Government to increase the supply of developable land as a long-term strategy to cope with future development needs and to capture windfall opportunities in the fast changing market.

The Government is currently relying on rezoning, redevelopment, land resumption and redevelopment of ex-quarry sites as the major methods to supply land. However, these methods have their own challenges and problems and have been significantly affecting the Government to supply land in a timely manner. While the Government will continue to make use of these existing land supply methods, the Government is actively pressing ahead with two other land supply methods which are not commonly used in recent years, including reclamation and rock cavern development.

On 30 June 2011, CEDD commissioned Ove Arup and Partners HK Ltd. (Arup) as the Consultant to undertake this Feasibility Study to strive for an enhanced land supply strategy by focusing on two land supply methods, i.e. reclamation outside Victoria Harbour on an appropriate scale and rock cavern development. The Study includes a two-stage Public Engagement exercise to gauge public views and foster public's understanding and acceptance on the issues.

1.2 Objectives of Assignment

The main objectives of the assignment are to:

a) conduct a territory-wide site search in Hong Kong to identify potential reclamation and rock cavern development sites to be taken forward for more detailed study based on broad technical and environmental assessment;

b) launch a two-stage Public Engagement exercise to engage the public regarding increasing the land supply by reclamation outside Victoria Harbour on an appropriate scale and rock cavern development.

1.3 SEA and Objectives of SEA

The purpose of this Strategic Environmental Assessment (SEA) Report (Executive Summary) is to provide a brief summary on the SEA/environmental works undertaken under this Study and the SEA/environmental considerations and findings throughout the site selection process for reclamation.

SEA is a systematic process, with multi-stakeholder involvement, for analysing and evaluating environmental implications of proposed policies, plans and programmes, for assisting in strategic or planning decision-making; and for following up strategic or planning decisions.

This SEA study is to identify, assess and compare, at the strategic level, the potential environmental performance and impact of the proposed sites under different scenarios. Six stages have been involved by SEA study: (i) Review of Relevant Legislations and Guidelines; (ii) Review of Baseline Conditions; (iii) Identification of Environmental Key Issues/ Constraints and Opportunities; (iv) Territory-wide Site Search; (v) Broad Environmental Assessment; and (vi) Site Shortlisting Study.

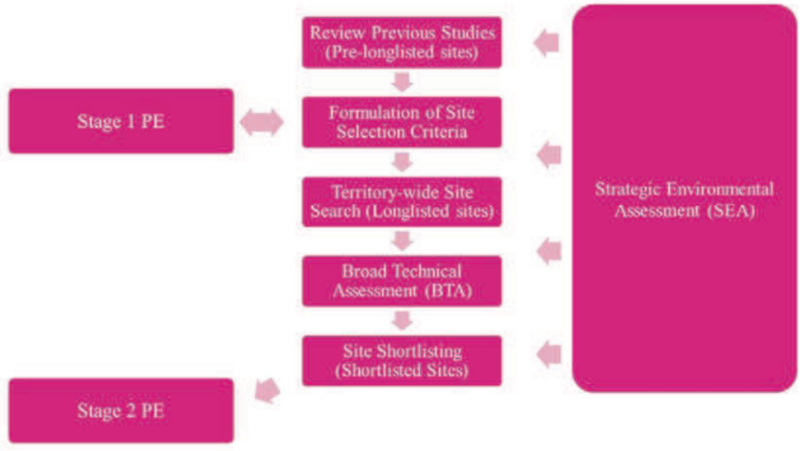
The SEA is undertaken to provide environmental information and integrate environmental factors at the strategic level to support the site identification and shortlisting process, and to recommend follow up works and actions required under the Strategic Environmental Monitoring & Audit (SEM&A) Plan and Programme to resolve and follow up the outstanding environmental issues of the shortlisted sites for reclamation.

1.4 Disclaimer

Any proposals pertaining to the extent, shape, land use, transport infrastructure, etc. for the reclamation sites shown in any report, are solely hypothetical assumptions for the purpose of broad technical assessment and strategic environmental assessment only. They do not represent the extent, shapes, land uses and transport infrastructures to be implemented in future regardless the sites are selected for further study or not. Indeed, all these development parameters will be developed based on future planning and engineering feasibility studies, statutory processes including the Environmental Impact Assessment Ordinance (EIAO), Town Planning Ordinance (TPO), etc. and public consultation.

2 Overall Site Selection Methodology

The site selection process carried out under this Study is broadly illustrated below:



Main tasks include:

a) review of previous studies and constraints for identification of pre-longlisted sites;

b) Stage 1 Public Engagement for formulation of initial site selection criteria (SSC);

c) selection of longlisted sites from the pre-longlisted sites based on the initial SSC;

d) refined SSC after stage 1 PE;

e) broad technical assessment (BTA) for the longlisted sites;

f) site shortlisting based on the findings of BTA, refined SSC after Stage 1 PE and SEA to shortlist sites for consultation in PE2 and further detailed study; and

g) Stage 2 Public Engagement to consult the public on the shortlisted sites.

Strategic Environmental Assessment (SEA) was also carried out to provide environmental input for the entire site selection process.

3 Review of Previous Studies and Constraints

A review of the previous studies has been carried out, including the previously studied reclamation projects, their opportunities and constraints. This review forms the basis of this Study with regards to the site selection process.

3.1 Constraints and Considerations

In addition to review of the previous projects, constraints mapping has been adopted to identify pre-longlisted sites based on Geographic Information System (GIS). A constraint mapping exercise began with the identification of key constraints, including predominantly physical, environmental and planning constraints, and a digital map for each category of constraints. These maps were overlaid to provide an overall constraint map. Constraints and considerations across the territory are identified and the relevant data was collated from the relevant government departments and/or other sources available. The constraints and considerations covered a range of aspects, including conservation, cultural heritage, physical and engineering. Based on the current development presumptions or requirements, these constraints and considerations can be either classified as “stop areas” or “constrained areas” for the purpose of this study, of which their definitions are as follows:

“Stop areas” - areas where there is strong presumption against development or where developments are not statutorily permitted under the existing legislation.

“Constrained areas” - areas where any development may be limited by existing constraints or known constraints that will be likely in place in the future.

These “Stop areas” and “Constrained areas” can be grouped into environmental constraints and other constraints, showing as below:

<u>SEA/ Environmental Constraints and Considerations</u>

- Country Park and Special Areas (stop area)
- Potential Country Parks (constrained area)
- Marine Parks and Marine Reserves (stop area)
- Proposed, Committed and Potential Marine Parks (constrained area)
- Ramsar Sites (stop area)
- Mai Po Nature Reserves (stop area)
- Sites of Special Scientific Interest (SSSI) (stop area)
- Conservation Areas (stop area)
- Coastal Protection Areas (stop area)
- Wetland Conservation Areas (stop area)
- Wetland Buffer Areas (constrained area)

- Priority Sites for Enhanced Conservation (constrained area)
- Ecologically Important Streams (constrained area)
- Seagrass Beds (constrained area)
- Mangroves (constrained area)
- Key Coral Areas (constrained area)
- Intertidal Mudflats (constrained area)
- Woodlands (constrained area)
- Juvenile Horseshoe Crab Sites (constrained area)
- Dolphin Hotspots (constrained area)
- Finless Porpoise Hotspots (constrained area)
- Fish Culture Zones (constrained area)
- Artificial Reef Development Areas (constrained area)
- Areas of Oyster Production (constrained area)
- Water Gathering Grounds and Reservoirs (constrained area)
- Gazetted Beaches and Beaches To be Gazetted (constrained area)
- Declared Monuments (stop area)
- Site of Archaeological Interest (constrained area)
- Graded and Proposed Graded Historic Buildings (constrained area)
- Consultation Zones of Potentially Hazardous Installations (PHIs) (constrained area)
- Safety Zone of PHIs (stop area)
- Existing Landfill Sites (constrained area)
- Landfill Extension (constrained area)
- Restored Landfill Sites (constrained area)
- Hong Kong International Airport Aircraft Noise Exposure Forecast (NEF) 25 Contours (constrained area)
- Geoparks (stop area)
- Green Belt (constrained area)

<u>Other Constraints and Considerations</u>

- Restricted Areas (stop area)
- Public Fill Banks (constrained area)
- Sediment Disposal Areas (constrained area)
- Explosives Dumping Grounds (constrained area)

- Marine Borrow Areas (constrained area)
- Traditional Burial Grounds (stop area)
- Recognized Indigenous Villages (Village Type Development) (constrained area)
- Victoria Harbour (stop area)
- Closed Areas (stop area)
- Military Sites (stop area)
- Airport Exclusion Zone (constrained area)
- Airport Height Restriction (constrained area)
- Deed of Restrictive Covenant of the Hong Kong Disneyland (constrained area)
- Anchorages & Designated Bunkering Areas (constrained area)
- Fairway & Navigation Channels (constrained area)
- Sub-sea Tunnels (constrained area)
- Marine Facilities (constrained area)
- Submarine Pipelines, Cables & Utilities (constrained area)
- Ship Wrecks (constrained area)
- Infrastructure & Development under Construction and/or Feasibility Studies (constrained area)
- Existing Development and Infrastructure (constrained area)

Summary of key constraints are shown in **Figures 1** to **5**.

3.2 SEA/Environmental Considerations in the Identification of Pre-longlisted Reclamation Sites

The contraints and considerations stated in **Section 3.1** are collated to produce constraint maps; these constraints and considerations are grouped as “Stop areas” and “Constrained areas” for the purpose of this study and for reclamation based on the current development presumptions or requirements.

Throughout the constraint mapping process, the SEA has identified the pre-longlisted sites avoiding the sites which fall within environmental-related “Stop Areas”, such as existing Marine Parks and Marine Reserves, Ramsar Sites, Mai Po Nature Reserves, SSSIs, Conservation Areas, Coastal Protection Areas, Wetland Conservation Areas, Geoparks, etc. The pre-longlisted sites have avoided all marine and terrestrial environmental/ecological significant/sensitive areas which are prohibited for development. The pre-longlisted sites may be subject to environmental and other constraints, and will be further considered in the next steps of the site selection process.

Based on the stop and constrained areas, a total of 48 nos. of pre-longlisted reclamation sites was identified. These sites are shown in **Figure 6** and listed below:

Site No.	Location
1	Mirs Bay
2	Tap Mun
3	Lung Kwu Tan
4	Tuen Mun Promenade
5	Tuen Mun Area 40
6	Tuen Mun Area 27 (Sam Shing)
7	Tai Lam Chung
8	Tsing Lung Tau
9	Sham Tseng
10	Tai Po Industrial Estate
11	Shuen Wan
12	Tai Po Kau
13	Ma Liu Shui Extension
14	Ma Liu Shui
15	Wu Kai Sha
16	Whitehead
17	Northwest Lantau
18	Tung Chung East 3
19	Siu Ho Wan
20	Sham Shui Kok
21	Sunny Bay
22	Tsing Chau Tsai East
23	Southwest Tsing Yi
24	Penny's Bay East
25	Discovery Bay
26	Nim Shue Wan
27	Kau Yi Chau West
28	Silver Mine Bay North
29	Silver Mine Bay South
30	Hei Ling Chau West
31	Hei Ling Chau Typhoon Shelter
32	Peng Chau – Hei Ling Chau
33	Lamma North
34	Sandy Bay
35	Heng Fa Chuen
36	Tseung Kwan O Area 131

Site No.	Location
37	Tseung Kwan O East
38	Jin Island
39	Shek Pik
40	Shek Kwu Chau Northwest
41	South Cheung Chau
42	Yung Shue Wan
43	Lamma Quarry
44	Shek O Quarry
45	Beaufort Island
46	Tai Long Wan Offshore
47	Eastern Waters
48	Southeast Offshore

4 Stage 1 Public Engagement and Formulation of Site Selection Criteria (SSC)

4.1 Stage 1 Public Engagement

The Stage 1 Public Engagement (PE1) was conducted between November 2011 and March 2012. The aim of PE1 was to seek public views on land supply by reclamation outside Victoria Harbour and rock cavern development, and the site selection criteria.

Methodology used in collecting and collating views during Stage 1 Public Engagement includes both quantitative feedback in the form of territory-wide telephone poll and feedback questionnaire, and qualitative feedback in the form of written submissions, signature campaigns or petitions organised by community groups, the online discussion forum on the PE website, comment forms collected during PE activities, and newspaper reports, etc.

To enhance the public awareness of the PE1 exercise and to encourage public participation, a series of PE activities including public forums and roving exhibitions were organized. The consultation document, PE1 Digest, was widely disseminated to the public at various outlets including District Offices, roving exhibition counters and public forums. A web version of the PE1 Digest and a promotional video was uploaded onto the Study website.

4.2 Site Selection Criteria

A set of SSC initially formulated through collaboration with various government departments in a Value Management Workshop (I) was put forward for discussion in PE1.

The proposed SSC were found to be largely agreeable to the general public. For reclamation, the impacts on environment and local community are identified as being relatively more important than other SSC, while for rock cavern development, the social impact, environmental impact and engineering feasibility are considered relatively more important among others. The SSC include:

Guiding Principles	For Reclamation
Social Harmony & Benefits	***Impact on local community***
	Site location and accessibility
	Can it meet local needs
Enhanced Environmental Performance	***Environmental impacts***
	Environmental benefits
Economic Efficiency & Practicality	Cost effectiveness
	Planning flexibility
	Engineering feasibility

4.3 SEA/Environmental Comments

Environmental – related Public Comments collected during Stage 1 Public Engagement include:

a) As for quantative feedback, views collected from the telephone poll and feedback questionnaire survey were mixed. In the telephone poll, there were fewer respondents supporting reclamation (33.6%) than those not supporting (46.4%). For the feedback questionnaire, it was the reverse, with 49.4% supporting reclamation and 42.5% not supporting. The major concerns of those who did not support reclamation were related to potential impacts on the environment and local communities. Site location was regarded by many as important when considering reclamation. Many respondents to the feedback questionnaire opposed to some of the 25 illustrative possible reclamation sites.

b) Respondents regarded the following as the more important site selection criteria for increasing land supply: potential impacts on the environment (rated by 72.9% in the telephone poll and 82% in the feedback questionnaire survey as important); impacts on local communities (rated by 61.9% in the telephone poll and 74.2% in the feedback questionnaire survey as important); and site location (rated by 71.4% in the telephone poll as important).

c) As for qualitative feedback, strong opposition was expressed, especially as regards some of the 25 illustrative possible reclamation sites. There were some comments supporting the reclamation option. Many comments collected from signature campaigns/petitions organized in local communities opposed reclamation at some of the specific locations. There were many comments concerned about how reclamation would damage the natural environment. There were also a lot of comments, mostly from one of the 25 possible reclamation sites, viz. Wu Kai Sha, that were concerned about how reclamation would affect Hong Kong's general image.

d) For the initial site selection criteria, the primary concerns expressed were the possible impacts on local community and damage to the natural environment.

4.4 Other Comments

Other key Public Comments collected during Stage 1 Public Engagement include:

a) broad support for establishment of land reserve;

b) broad consensus that more land will be required to meet housing needs, for better living environment and development.

c) broad support for a six-pronged approach for enhancing land supply.

d) site location is important when considering reclamation.

With reference to the feedback from PE1, the review will initially highlight the environmental and local community constraints associated with each site as these are considered by the public to be the two crucial criteria.

The Stage 1 Public Engagement Report and Executive Summary can be found on the Study website http://www.landsupply.hk.

4.5 SEA/Environmental Observations

Major SEA/Environmental observations noted in Stage 1 Public Engagement are summarized below:

a) There was no consensus on increasing land supply through reclamation outside Victoria Harbouron. A territory-wide telephone poll conducted by the independent Research Centre found more respondents opposing to reclamation than supporting, whereas the feedback questionnaire survey (online, self-administered or face-to-face interview questionnaires), also conducted by the Research Centre, found more respondents in support of reclamation than opposing.

b) The same surveys also found that the major concerns of those who did not support reclamation were related to potential impacts on the environment and local communities. Site location was regarded by many as important when considering reclamation.

c) As for qualitative feedback, many feedback collected from signature campaigns and petitions organised in local communities opposed some of the 25 possible reclamation sites announced by the Government in response to the public to facilitate discussions on the initial site selection criteria. The main concerns were also potential impacts on the environment and local communities. There were a lot of comments, mostly from one of the 25 possible reclamation sites, viz. Wu Kai Sha, that were concerned about how reclamation would affect Hong Kong's general image.

d) There were some comments supporting the reclamation option from development point of view.

e) Overall, there was broad consensus that impacts on the environment and local communities were the most important considerations for increasing land supply and the most important site selection criteria for reclamation outside Victoria Harbour.

5 Selection of Longlisted Sites

5.1 Site Longlisting Methodology

Based on constraint mapping exercise, a total of 48 pre-longlisted reclamation sites were identified for longlisting. A longlisting exercise was carried out which is a screening process to select a smaller batch of sites from the pre-longlist for further study. In the longlisting exercise, each pre-longlisted sites have undergone preliminary evaluation. Each site was graded with A, B or C with reference to different site selection criteria based on the preliminary assessment. These grades only provide preliminary indications of the relative performance of the sites with reference to the site selection criteria and are not to indicate their absolute values, and may vary with the results of any further detailed studies/assessment. In this broad comparison of the sites, the more grade As that are identified for the site it is assumed that it is more likely for these sites to be suitable for being selected for further study under this Assignment.

5.2 Initial Site Selection Criteria

As mentioned in Section 4, initial site selection criteria were derived based on views collected from public in Stage 1 PE and recommendations from government departments, impacts on the environment and local communities are the most important site selection criteria for reclamation. These initial site selection criteria were categorized into SEA/Environmental Site Selection Criteria and Other Site Selection Criteria, and are summarized below.

5.2.1 SEA/Environmental Site Selection Criteria

5.2.1.1 Environmental Impacts

The environmental impacts on natural resources and surrounding environment for the reclamation sites are considered based on the established constraints map and identified environmental resources and constraints in previous studies. Issues considered include distance of reclamation site from SSSI, bathing beach, Marine Park or Marine Reserve, Proposed, Committed and Potential Marine Park, Fish Culture Zone, Restricted Area, Coastal Protection Area, Conservation Area, Country Park, Special Areas, recognized heritage sites, and other ecological sensitive areas, etc.

This Site Selection Criteria "Environmental Impacts" focuses on the impacts from the proposed reclamation on natural resources and surrounding environment, while the impacts from Landfill Sites, Potentially Hazardous Installations, air quality/odours emission sources and noise emission will be considered in "Planning Flexibility". Sea water intakes have been identified in the study. As the seawater intake can be re-provisioned, the constraints from Sea Water Intakes have been considered in "Engineering Feasibility".

5.2.1.2 Environmental Benefits

The environmental performance of potential environmental benefits for the reclamation site is considered based on the surrounding environment and site

selection criteria. Issues considered include potential of enhancing the local ecological, fisheries, cultural heritage and landscape value and visual aspects, local water quality, volume of public fill that the reclamation works can absorb, etc.

5.2.1.3 Planning Flexibility

This criterion assesses whether the reclamation site is near or within any constraint upon which any development within the reclamation site will be constrained thus reducing the flexibility in planning for the development. Issues considered include potential constraints on development imposed by the nearby environment (e.g. Airport Height Restrictions, or re-provisioning of an existing anchorage area, noise or air quality, existence of unwelcome neighbourhood facilities or industrial areas, hazard to life, landfill gas hazard, etc.).

5.2.2 Other Site Selection Criteria

5.2.2.1 Impact on Local Community

This criterion considers the impact on local community that could be brought to the area around the reclamation site. Issues that have been considered in the exercise include impact on local cultural or heritage features, distance between reclamation and the shore or existing residential development, visual impact, etc.

5.2.2.2 Site Location and Accessibility

This criterion considers the accessibility of the site location, condition of existing infrastructures, scale of new infrastructure required for connection to the site, etc.

5.2.2.3 Can it Meet Local Needs

This criterion considers whether the proposed works can potentially meet any local needs (e.g. are there any needs of creating GIC / housing area or job opportunities in the local community) identified from District Councils and relevant planning studies, how these needs are satisfied by the formation of reclaimed land, etc.

5.2.2.4 Cost Effectiveness

The construction cost to reclamation area ratio generally decreases as the reclamation area is enlarged. Therefore, in terms of cost effectiveness, it is generally more economically to reclaim a larger area.

5.2.2.5 Engineering Feasibility

Feasibility of reclamation development is subject to whether the engineering constraints, if any, can be resolved practically within the bounds of feasible engineering solutions. Issues considered include presence of submarine pipeline(s) or cable(s), presence of existing marine facilities (e.g. typhoon shelter) at or in the vicinity of the sites, reclamation works potentially limited by clearance restrictions from adjacent bridges, water depth, impact on strategic marine utilities,

re-provisioning of substantial length of quays or strategic infrastructure, or the site is so remote that there could be difficult for utilities connection etc.

5.3 SEA/Environmental Findings in the Longlisting Process for Reclamation

The pre-longlisted reclamation sites have been evaluated under each of the initial SSC outlined above. 27 nos. of reclamation sites are selected to form the longlisted sites as shown in **Figure 7**.

The longlisted reclamation sites are divided into the following 4 categories:

- Category A – “Artificial Island”;
- Category B – “Reclamation to connect islands”;
- Category C – “Reclamation upon artificial or disturbed shoreline”; and
- Category D – “Reclamation upon natural but not protected shoreline”.

It is worth to highlight that among these 27 nos. longlisted reclamation sites, despite some of them may have relatively higher environmental concerns, but they were still selected into the longlist for further broad technical assessment and shortlisting because of other considerations such as less impact to local community, better location and accessibility, higher development potential and flexibility, higher cost effectiveness, engineering feasibility, etc. The SEA/environmental findings of the longlisted sites selected is summarized below:

Site No.	Ref. No.	Site Location	Summary of SEA/Environmental Preliminary Findings
30	A1	Hei Ling Chau West	Likely high impact due to extremely close to Chi Ma Wan Fish Cultural Zone
41	A2	South Cheung Chau	Likely high impact due to encroachment into finless porpoise hotspot and close proximity to proposed marine park and fish spawning ground
33	A3	Lamma North	Relatively low impact
22	A4	East Tsing Chau Tsai	Moderate impact due to archaeological interest and one nesting location for white-bellied Sea Eagle nearby
27	A5	Kau Yi Chau West	Moderate impact due to conservation area nearby
32	B1	Peng Chau - Hei Ling Chau	Likely high impact due encroachment into key coral areas and Bogadek’s Burrowing Lizard nearby
45	B2	Beaufort Island	Likely high impact due to encroachment into key coral areas, and breeding site of White-bellied Sea Eagle, finless porpoise, site of conservation importance for butterflies, re-fueling ground for migratory bird, Tern breeding colony, potential Country Park and fish spawning ground nearby

Site No.	Ref. No.	Site Location	Summary of SEA/Environmental Preliminary Findings
5	C1	Tuen Mun Area 40	Moderate impact due to CWD hotspot, fish spawning ground nearby
6	C2	Tuen Mun Area 27 (Sam Shing)	Likelyhigh impact due to extremely close to gazetted beach
8	C3	Tsing Lung Tau	Moderate impact due to country park and noise/air sensitive uses nearby
19	C4	Siu Ho Wan	Likely high impact due to extremely close to commited marine park and CWD hotspot; also close to horseshoe crab site, Priority Site for Enhanced Conservation, PHI, etc.
21	C5	Sunny Bay	Moderate impact due to mangrove, seagrass bed and some CWD sightings recorded nearby.
23	C6	Southwest Tsing Yi	Moderate impact due to impact on dispersion and dilution of HATS discharge nearby (note: development assumes most PHI nearby will be relocated off site)
29	C7	Silvermine Bay South	Moderate impact due to country park and air/noise sensitive uses nearby
10	C8	Tai Po Industrial Estate	Relative less impact
12	C9	Tai Po Kau	Likely high impact due to extremely close proximity to declared monuments and mangroves.
14	C10	Ma Liu Shui	Relative less impact
34	C11	Sandy Bay	Moderate impact due to some coral communities nearby
43	C12	Lamma Quarry	Likely high impact due to extremely close proximity to fish culture zone nearby, fish spawning ground and coastal protection area
37	C13	Tseung Kwan O East	Moderate impact due to coral communities nearby
3	D1	Lung Kwu Tan	Likely high impact due to close proximity to CWD hotspot; also close to site of archaeological interest and horseshoe crab recorded nearby
7	D2	Tai Lam Chung	Moderate impact due to site of archaeological interest and air/noise sensitive uses nearby
28	D3	Silvermine Bay North	Moderate impact due to site of archaeological interest and country park nearby
11	D4	Shuen Wan	Moderate impact due to fish culture zone, air/noise sensitive uses, Tai Po egretry and fish fry collection areas nearby
15	D5	Wu Kai Sha	Moderate impact due to site of archaeological interest, air/noise sensitive uses and fish fry

Site No.	Ref. No.	Site Location	Summary of SEA/Environmental Preliminary Findings
			collection areas nearby
36	D6	Tseung Kwan O Area 131	Moderate impact due to coral community and graded / proposed historic buildings nearby
44	D7	Shek O Quarry	Moderate impact due to coastal protection area, country park, SSSI and noise sensitive uses nearby

For those 21 nos. of reclamation sites which were not selected into the longlist, some were found to have significant environmental impacts (e.g. Nim Shue Wan, Sham Tseng, Northwest Lantau, Shek Kwu Chau Northwest, Tai Long Wan Offshore, Tap Mun, Ma Liu Shui Extension, Sham Shui Kok), while some sites will have moderate environmental impact (e.g. Discovery Bay, Eastern Waters, Jin Island, Mars Bay, Southeast Offshore, Tuen Mun Promenade, Tung Chung East 3, Whitehead, Heng Fa Chuen, Yung Shue Wan, Shek Pik, Hei Ling Chau Typhoon Shelter) and some have relatively less environmental impact (e.g. Penny's Bay East). For those sites with moderate or less environmental impact, they were not selected into the longlist because for other considerations such as significant impact to local community, low development potential, poor location or accessibility, small reclamation area, other planning and engineering constraints, etc.

6 Broad Environmental Assessments

6.1 Broad Environmental Assessments

Broad environmental assessments were carried out as part of the broad technical assessments of the study for the longlisted reclamation sites. Broad technical assessments were also carried out for the longlisted sites on other different aspects, including land use, urban planning and urban design; traffic impact assessment; civil works, e.g. water, drainage, sewerage, etc.; aircraft and helicopter operations impacts; sustainability assessment; geotechnical appraisal; and implementation, construction and costing.Any proposals pertaining to the extent, shape, land use, transport infrastructure, etc. for the reclamation sites shown in any report, are solely hypothetical assumptions for the purpose of broad technical assessment and strategic environmental assessment only. They do not represent the extent, shapes, land uses and transport infrastructures to be implemented in future regardless the sites were selected for further study or not. Indeed, all these development parameters will be developed based on future planning and engineering feasibility studies, statutory processes including EIAO, TPO, etc. and public consultation.

The environmental performances of the 27 longlisted reclamation sites have been studied in the broad environmental assessments as part of the broad technical assessments of the study. Different environmental aspects, including air quality, noise, water quality, ecology, fisheries, landscape and visual, waste management, hazard to life and landfill gas hazard have been assessed in broad terms to identify the potential environmental issues/ constraints and opportunities of each longlisted reclamation site at the strategic level. It should be noted that the environmental issues highlighted in this chapter are the situation before introducing mitigation measures. Subject to more detailed studies, the potential impacts may be avoided or mitigated through changing the design of the scheme and/or applying suitable mitigation measures. Detailed assessments in further studies and statutory EIA and town planning processes will be needed in future to confirm the environmental acceptability and mitigation measures required on these different sites and their development proposals.

6.2 Key Environmental Issues of Longlisted Sites

6.2.1 Site A1 – Hei Ling Chau West

This site may have potential impacts on various water/ecological sensitive receivers such as Bogadek's Burrowing Lizard and Phymatodes longissima in Hei Ling Chau, and fishery resources in the surrounding areas, including Hei Ling Chau Typhoon Shelter, corals at Chi Ma Wan, Hei Ling Chau North and South, mangroves at Chi Ma Wan, Cheung Sha Wan Fish Culture Zone, and Adult Fish Production Area of relatively moderate production rate. There may be water quality impact from key water pollution sources from Hei Ling Chau (West) Sewage Treatment Works. In addition, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.2 Site A2 – South Cheung Chau

Due to the massive size and shape of the Island, the site may seriously block water exchange between southern Lantau and the South China Sea, having potential hydrodynamic and water quality impact in the central waters. Any transportation infrastructures, such as rail tunnel, that are to be provided to support the artificial island may bring potential impact on the water flow and water quality of the region. In addition, this site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including hotspot of Finless Porpoises, Shek Kwu Chau proposed Marine Park, coastal protection areas at south Cheung Chau and Shek Kwu Chau, horseshoe crab areas and beaches at southern Lantau, and Adult Fish Production Area of relatively high production rate. Furthermore, this site may also have landscape and visual issues including loss of southern coastal waters landscape resources. With the implementation of the Integrated Waste Management Facilities Phase 1 at Shek Kwu Chau and an Offshore Wind Farm east to this site, there may be potential cumulative air quality, noise, and water quality impact.

6.2.3 Site A3 – Lamma North

This site is located in the proximity to the Lamma Power Station and the main navigation channel. There will be key marine emission from the main navigation channel. This site may have hydrodynamic and water quality impact on East Lamma Channel and West Lamma Channel and on the Harbour Area Treatment Scheme (HATS) discharge dispersion. Any transportation infrastructures, such as rail, that are to be provided to link up and support the artificial island with Hong Kong Island may bring potential impact on the water flow and water quality of the region. This site may also have ecology impact due to its short distance to corals sites at Shek Kok Tsui and north to Lamma Island, and the beaches at the southern Hong Kong Island. Impact on Coastal Protection Area at north-western Lamma Island is anticipated. Moreover, the site is located relatively close to Lo Tik Wan Fish Culture Zone and encroaches to Adult Fish Production Area of relatively high production rate. Furthermore, this site may also have landscape and visual issues including loss of coastal waters of northern Lamma Island landscape resources.

6.2.4 Site A4 – Tsing Chau Tsai East

As the site is relatively close to Ma Wan, it may have potential impact on water quality, ecological and fishery resources at Ma Wan (e.g. Ma Wan Fish Culture Zone and mudflat). In addition, the site may have disturbance to the important habitat for White-bellied Sea Eagle at Pa Tau Kwu. One nesting location for white-bellied Sea Eagle is recorded to the south of the site in the ecological surveys and sheltered from the site by a hillock. This site may also be potentially subject to noise and air quality impacts from fireworks at Disneyland. There will also be potential impact on the dispersion and dilution of Harbour Area Treatment Scheme (HATS) discharge and have hydrodynamic and water quality impacts on Kap Shui Mun and Ma Wan Channel. Any transportation infrastructures, such as bridge, tunnel, etc., that are to be provided to link up and support the artificial island with Kau Yi Chau West and/or others may bring potential impact on the

water flow and water quality of the region. Furthermore, this site may also have landscape and visual issues including loss of central waters landscape resources.

6.2.5 Site A5 – Kau Yi Chau West

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including recorded coral communities around Kau Yi Chau and Siu Kau Yi Chau, and coral areas at Sunshine Island, southern Peng Chau, and Tung Wan, and coastal protection areas at Peng Chau. This site will also affect the dispersion and discharge of Harbour Area Treatment Scheme (HATS) discharge and the overall hydrodynamic and water quality impact on the whole region. In addition, this site encroaches to Adult Fish Production Area of relatively moderate production rate. Any transportation infrastructures, such as bridge, tunnel, etc., that are to be provided to link up and support the artificial island with Tsing Chau Tsai East and/or others may bring potential impact on the water flow and water quality of the region. Furthermore, this site may also have landscape and visual issues including loss of central waters landscape resources.

6.2.6 Site B1 – Peng Chau-Hei Ling Chau

This site is located relatively close to main navigation channels, which may have potential air quality issue. This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including recorded coral communities at Sunshine Island, key coral area at northern Peng Chau and northern Hei Ling Chau, and mudflat at Sunshine Island. Any transportation infrastructures, such as bridge, tunnel, etc., that are to be provided to link up and support the reclaimed area with Peng Chau and Hei Ling Chau and/or others may bring potential impact on the water flow and water quality of the region. Water quality impact due to impact on sewage discharge from Hei Ling Chau STW sewage outfall is also anticipated. There may be fisheries impact on Adult Fish Production Area. Furthermore, this site may also have landscape and visual issues including loss of central waters landscape resources.

6.2.7 Site B2 – Beaufort Island

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including finless porpoise habitats, Marine Reserve, Romer's Tree Frog, rare plants and birds at Po Toi Island, key coral areas at western Po Toi, southern Beaufort Island, Lo Chau Mun and Sung Kong, etc. Any transportation infrastructures, such as bridge, tunnel, etc., that are to be provided to link up and support the reclaimed area with Beaufort Island and/or others may bring potential impact on the water flow and water quality of the region. In addition, this site may have disturbance to important land-based species (e.g. Romer's Tree Frog, rare plants and birds at Po Toi Island). Moreover, the whole site falls within the Fish Spawning Ground and encroaches to Adult Fish Production Area of relatively high production rate. Furthermore, this site may also have landscape and visual issues including loss of coastal waters, natural coastline and vegetation landscape resources.

6.2.8 Site C1 – Tuen Mun Area 40

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Butterfly Beach, Committed Marine Park in the Brothers Islands, Fish Spawning Ground, coral areas, relative moderate production rate of Adult Fish Production Area, etc. This site may also have potential hydrodynamic impact on Pillar Point Sewage Treatment Works discharge dispersion and water quality impact in the region. In addition, the site is in the proximity of different industrial uses in Tuen Mun with chimney emissions such as Butterfly Beach Laundry and EcoPark, marine traffic and River Trade Terminal, road traffic, and helipads. Various potential land use interfacing issues, including air quality and noise issues from the increased traffic by Tuen Mun Western Bypass, Tuen Mun-Chek Lap Kok Link, Hong Kong Link Road and Hong Kong-Zhuhai-Macao Bridge and Hong Kong Boundary Crossing Facilities, and odour emission from Pillar Point Sewage Treatment Works, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters, natural coastline and vegetation landscape resources.

6.2.9 Site C2 – Tuen Mun Area 27

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Castle Peak Beach, Kadoorie Beach and Adult Fish Production Area of relatively moderate production rate, etc. In addition, the site is in the proximity of different industrial uses such as Tube Ice Plant, marine traffic, Joint User Complex and Wholesale Fish Market, road traffic, and railway lines. Various potential land use interfacing issues, including air quality and noise issues from increased traffic by traffic improvements to Tuen Mun Road Town Centre Section, Castle Peak Road and marine vessels, odour emission from Castle Peak Fish Market and Joint User Complex and Wholesale Fish Market, and public cargo handling area, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources in Castle Peak Bay.

6.2.10 Site C3 – Tsing Lung Tau

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Angler's Beach and Ma Wan Fish Culture Zone. In addition, the site is in the proximity of marine traffic and road traffic. Various potential land use interfacing issues, including air quality issues and noise impact with Castle Peak Road and main navigation channel are to be considered. Furthermore, this site may also have landscape and visual issues including loss of coastal waters and natural coastline landscape resources.

6.2.11 Site C4 – Siu Ho Wan

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including Chinese White Dolphin (CWD), Committed Marine Park at The Brothers, Tai Ho Stream SSSI, horseshoe crabs, mangrove areas, etc. There may be potential hydrodynamic and water quality impacts around Urmston Road. The site is in the proximity of different NIMBY

facilities and industrial uses such as different waste facilities, marine traffic, road traffic from the highway, and MTR railway lines. Various potential land use interfacing issues, including air quality issues, odour emission, hazard to life issue, noise impact, water treatment works, various bus depots, vehicle examination centre, maintenance depot, etc. are anticipated. Subject to the NEF 25 Contour for 3 Runway-System for aircraft noise, the site may have development constraints for the areas encroached by the NEF 25 Contour. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.12 Site C5 – Sunny Bay

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including Chinese White Dolphin, committed The Brothers Marine Park, mangrove, seagrass beds. There may be potential hydrodynamic and water quality impacts around Urmston Road. Subject to the NEF 25 Contour for both 3 runways and 2 runways -system for aircraft noise, the site may be subject to development constraints for the areas encroached by the NEF 25 Contour. Various potential land use interfacing issues, including air quality issues and noise impact from the increased traffic by future Tung Chung East and West Developments, Tuen Mun-Chek Lap Kok Link, Hong Kong Link Road and Hong Kong-Zhuhai-Macao Bridge and Hong Kong Boundary Crossing Facilities, are anticipated. The site is also adjacent to road traffic from the highway, railway lines and station, and helipad. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.13 Site C6 – Southwest Tsing Yi

Depending on the future use of the site, relocation of the PHIs may be needed. This site is close to five Potentially Hazardous Installations (PHIs), including oil depots and terminals. Relocation of these PHIs should be carried out prior to development of the site. There may also be potential impact on hydrodynamic and water quality due to the possible impact of the site on the dispersion and dilution of Harbour Area Treatment Scheme (HATS) discharge. In addition, this site is in the proximity of many industrial uses and NIMBY facilities such as Chemical Waste Treatment Center and workshops along the western and southern coastline of Tsing Yi. Various potential land use interfacing issues are anticipated, including road traffic noise and vehicular emission from the nearby Cheung Tsing Highway and Tsing Yi Road; helicopter noise from helipad to the north-west; fixed plant noise from container terminals, dockyards, industrial buildings; and marine emission problems from marine traffic around Ma Wan Channel. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.14 Site C7 – Silver Mine Bay South

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including key coral area at northern Hei Ling Chau and Chi Ma Wan, mangroves at Chi Ma Wan, Silver Mine Bay Beach, Cheung Sha Wan Fish Culture Zone, and Adult Fish Production Area of relatively moderate production rate, etc. There may be ecological impact

on key terrestrial habitat in Lantau North and Lantau South Country Park. This site may also have potential hydrodynamic impact on Mui Wo Sewage Treatment Works discharge dispersion and water quality impact in the region. In addition, the site is within the PHI consultation zone of Silver Mine Bay Water Treatment Works, and in the proximity of different NIMBY facilities and industrial uses such as Concrete Batching Plant and Mui Wo Sewage Treatment Works, marine traffic, road traffic, helipads, and Silver Mine Bay Water Treatment Works. Various potential land use interfacing issues, including air quality issues, odour emission, noise impact, and hazard to life from Silver Mine Bay Water Treatment Works, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.15 Site C8 – Tai Po Industrial Estate

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Lam Tsuen River mouth, mangroves at Tai Po Kau, Tai Po Egretry SSSI, and Yim Tin Tsai Fish Culture Zone, etc. This site may also have potential hydrodynamic impact on dispersion of discharge from Tai Po Sewage Treatment Works and water quality impact on the water body of Tolo Habour. In addition, the site is within the PHI consultation zone, and in the proximity of different industrial uses in Tai Po Industrial Estate, road traffic, helipads, fuel tanks of Hong Kong & China Gas Co. Ltd., and Restored Shuen Wan Landfill. Various potential land use interfacing issues, including air quality issues, odour emission, noise impact, hazard to life, and landfill gas hazard, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.16 Site C9 – Tai Po Kau

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including mangroves at Tai Po Kau, Lam Tsuen River mouth, mangroves/inter-tidal mudflat at Tai Po Kau, and Yim Tin Tsai Fish Culture Zone, etc. There may be potential water quality impact on the water body of Tolo Harbour. In addition, this site is in the proximity of declared monument - Island House, road traffic, East Rail Line, and helipad. Various potential land use interfacing issues, including air quality issues, noise impact, and culture heritage impact, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.17 Site C10 – Ma Liu Shui

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including Shing Mun River, and seawater intake at Ma Liu Shui, etc. Odour and helicopter noise are the concerns to the proposed residential and other sensitive uses on the reclamation site, if there are no relocations of the sewage treatment works and helipad. There may be potential water quality impact on the water body of Tolo Harbour. This site will also be subject to marine emissions, road traffic and railway noise issues as the site is adjacent to Ma Liu Shui pier, highways and railway line.

6.2.18 Site C11 – Sandy Bay

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including recorded coral communities at Sandy Bay, and Adult Fish Production Area of relatively moderate production rate, etc. In addition, the site is in the proximity of marine traffic, road traffic, sewage treatment works, and graded historical buildings. Various potential land use interfacing issues, including air quality issues, odour emission from Sandy Bay Sewage Treatment Works and Cyberport Sewage Treatment Works, noise impact, and culture heritage impact, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.19 Site C12 – Lamma Quarry

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including finless porpoise habitats, coastal protection area in eastern to ex-Lamma Quarry and Lamma Island, Romer's Tree Frog habitat on Lamma Island, Sok Kwu Wan Fish Culture Zone, Lo Tik Wan Fish Culture Zone, Fish Nursery Ground, Fish Spawning Ground, artificial reef deployment area at Lo Tik Wan Fish Culture Zone, key coral areas at Luk Chau, etc. In addition, the site is in the proximity of industrial dusty uses such as Cement Works, Lamma Power Station, marine traffic, and helipads. Various potential land use interfacing issues, including air quality issues and noise impact from Cement Works and Sok Kwu Wan Ferry Pier, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.20 Site C13 – Tseung Kwan O East

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including recorded coral communities in Junk Bay – Junk Island (Fat Tong Chau), WSD Flushing Water Intake Tseung Kwan O, and Adult Fish Production Area of relatively moderate production rate, etc. In addition, the site is in the proximity of different industrial uses in Tseung Kwan O Industrial Estate, marine traffic, road traffic, Tseung Kwan O Sewage Treatment Works, Biodiesel Plant, and some landfill sites. Various potential land use interfacing issues, including air quality issues, odour issue, noise impact, and hazard to life are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.21 Site D1 – Lung Kwu Tan

This site may have potential impacts on different water/ecological sensitive receivers, including Chinese White Dolphin, Sha Chau and Lung Kwu Chau Marine Park, Committed Marine Park at The Brothers, and SSSI at Lung Kwu Chau, Tree Island and Sha Chau, horseshoe crabs, and butterfly habitats at Lung Kwu Tan Valley SSSI and Siu Lang Shui SSSI, etc. There may be potential hydrodynamic and water quality impacts around Urmston Road. The site is surrounded by many existing/ committed/ planned/ proposed NIMBY facilities and industrial uses such as Castle Peak A&B Power Station and EcoPark, Black

Point Power Station, cement plant, aviation fuel facility, steel mill, landfills, different waste facilities, marine traffic, road traffic, helipads and Sites of Archaeological Interest. Various potential land use interfacing issues, including odour emission, air quality problems, noise impact, and culture heritage impact, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.22 Site D2 – Tai Lam Chung

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including Chinese White Dolphin (CWD) and Golden Beach, etc. In addition, the site is in the proximity of road traffic, helipad, and Site of Archaeological Interest. Various potential land use interfacing issues, including air quality issues, noise impact from Tuen Mun Road and Castle Peak Road, helicopter noise and cultural heritage impact, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.23 Site D3 – Silver Mine Bay North

This site may have potential impacts on various water/ecological sensitive receivers in the surrounding areas, including Silver Mine Bay Beach and key coral area at northern Hei Ling Chau, etc. This site may also have potential hydrodynamic impact on Mui Wo Sewage Treatment Works discharge dispersion and water quality impact in the region. In addition, the site is in the proximity of Site of Archaeological Interest. Various potential land use interfacing issue, including culture heritage impact, is anticipated. Furthermore, this site may also have landscape and visual issues including loss of central waters landscape resources.

6.2.24 Site D4 – Shuen Wan

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Yim Tin Tsai Fish Culture Zone, Centre Island SSSI, and mangroves at Tai Po Kau, etc. There may be potential water quality impact on the water body of Tolo Harbour. In addition, the site is in the proximity of road traffic, dusty industrial use, Tai Po Wholesale Fish Market, Tai Po Sewage Treatment Works, Restored Shuen Wan Landfill. Various potential land use interfacing issues, including air quality issues, odour issue, noise impact, and landfill gas hazard, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.25 Site D5 – Wu Kai Sha

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Centre Island SSSI, Yim Tin Tsai Fish Culture Zone, Yim Tin Tsai (East) Fish Culture Zone, etc. There may be potential water quality impact on the water body of Tolo Harbour. In addition, the site is in the proximity of road traffic, railway (Ma On Shan Line), White Head (Pak Shek) sewage pumping station, and Site of Archaeological Interest. Various potential land use interfacing issues, including

air quality issues, odour issues, and noise impact are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters landscape resources.

6.2.26 Site D6 – Tseung Kwan O 131

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including recorded coral community at Lei Yue Mun Point, and Adult Fish Production Area of relatively high production rate, etc. In addition, the site is in the proximity of marine traffic, road traffic, and Junk Bay Chinese Permanent Cemetery. Various potential land use interfacing issues, including air quality issues and noise impact from the increased traffic by Cross Bay Link Tseung Kwan O, are anticipated. Furthermore, this site may also have landscape and visual issues including loss of coastal waters and natural coastline landscape resources.

6.2.27 Site D7 – Shek O Quarry

This site may have potential impacts on various water/ecological sensitive receivers and fishery resources in the surrounding areas, including Cap D' Aguilar Marine Reserve, coastal protection area at Shek O Quarry, Shek O Country Park, and Adult Fish Production Area of relatively high production rate, etc. In addition, the site is in the proximity of vehicle emission and road traffic from Shek O Road and Cape D'Aguilar Road. Furthermore, this site may also have landscape and visual issue s including loss of coastal waters landscape resources.

6.3 Overall Strategic Environmental Findings of the Longlisted Reclamation Sites

It is observed that all 27 Recommended Longlisted Sites for reclamation have different environmental constraints.

Overall Strategic Environmental Performances

- For sites in Category A – Artificial island and sites in Category B – Reclamation to connect islands, the common critical environmental issues include of water quality, ecology, fisheries, and landscape and visual.
- For sites in Category C – Reclamation upon artificial or disturbed shoreline and Category D – Reclamation upon natural but not protected shoreline, the common critical environmental issues include air quality and noise due to the land use interfacing uses, water quality, ecology, fisheries, and landscape and visual.
- Hazard to Life issue is a key issue for Site C4 Siu Ho Wan, Site C7 Silver Mine Bay South, Site C8 Tai Po Industrial Estate and Site C13 Tseung Kwan O East.
- Site A4 Tsing Chau Tsai East appears to have less environmental constraints, while comparatively; Site C4 Siu Ho Wan, Site C5 Sunny Bay, Site C7 Silver Mine Bay South, Site C9 Tai Po Kau, Site C12 Lamma Quarry, Site D1 Lung Kwu Tan and Site D4 Shuen Wan appear to have more environmental constraints.

- From waste management aspect, the potential environmental impacts due to Construction stage: construction and demolition waste during construction phase and municipal waste during operational phase are anticipated in all 27 recommended Longlisted Sites. Sediment and chemical waste and general refuse, sewage
- Operational stage: Municipal, chemical waste, sewage

Consideration of Mitigation Measures

Some issues (e.g. landfill gas hazard) will be subject to future detailed assessments to address their impacts, while other impacts (e.g. chimney emission) will be subject to further studies/assessments, future statutory EIAs, land use planning, etc. to confirm their environmental impacts.

- Construction dust and noise impact are normally transient. Proper mitigation measures, except under special situations, have been proven to be effective in many previous cases. Operational air quality and noise impact will require for detailed investigation and modelling assessment, while certain mitigation measures (i.e. sufficient setback distances, proper landuse layout, etc.) can be considered.
- Potential impact on water quality during construction phase will normally be mitigated by non-dredged method and deployment of silt curtain, subject to further assessment. Potential impact on water quality during operational phase, including the hydrodynamic impact, will require further investigation. The feasibility and effectiveness of the mitigation measures will be subject to further studies/assessments, future statutory EIAs, land use planning, etc. for confirmation.
- For ecology and fisheries, it will require further comprehensive baseline survey, monitoring and impact assessment to confirm the impact. Water quality relevant mitigation measures may be applicable to minimise ecological and fisheries impact subject to further studies/assessments. Other site-specific ecology and fisheries mitigation measures to minimise the impacts to CWD and other ecological/fisheries species/habitats for Site D1 Lung Kwu Tan, C4 Siu Ho Wan and C5 Sunny Bay, will also be needed, and assess and recommended in further studies/assessments.
- Potential impact landscape and visual during construction phase and operational phase will normally be mitigated through integrated landscape and urban design and viewing corridors, subject to further studies/assessments, future statutory EIAs, land use planning, etc. for confirmation.
- For the sites subject to hazard to life issues, quantitative risk assessments are required during engineering investigation stages to assess and address the hazard to life impacts of the development proposals of the site.
- The size and shape of reclamation will be revisited as one of the possible means to address the environmental issues.
- Potential environmental impacts due to waste generated from proposed developments during construction and operational phase can be mitigated by proper collection, transportation, treatment and disposal system/arrangement.

Secondary impact such as odour nuisance, vermin, water pollution and visual impact shall also be reduced.

7 Site Shortlisting and Key Environmental Issues and Opportunities of the Shortlisted Sites and Artificial Islands

7.1 Site Shortlisting Methodology

Site shortlisting is to select shortlisted sites from the longlist by qualitative assessment based on the results of Broad Technical Assessment and the refined Site Selection Criteria. This shortlisting process is to select sites that have higher potential for consultation with the public in PE2 and further detailed study. Reclamations (under Item C of Schedule 2) and engineering feasibility studies of urban development projects with study areas more than 20 ha or involving population of more than 100 000 (under Schedule 3) are Designated Projects under the EIAO. There would also be other potential Designated Project elements on the shortlisted reclamation sites. All the shortlisted sites will need to eventually go through separate feasibility studies, statutory processes under EIAO, Town Planning Ordinance, etc. and public consultations to confirm their environmental acceptability and mitigation measures required.

Qualitative review was undertaken to take into account the potential key issues/constraints, and possible mitigation measures of the longlisted sites.

With reference to the feedback from PE1, environmental impact is one of the key site selection criteria considered by the public during the public engagement activities, and therefore environmental impact is initially considered in the site shortlisting stage together with impact on local community which is also considered as the key criteria by the public in Stage 1 PE.

The selected sites are then assessed with reference to other key considerations revealed from the Broad Technical Assessments in the site shortlisting process. These may include but are not limited to development potential and constraints, transport links, traffic impact, aircraft and helicopter flight paths, etc. Environmental-related factors, such as planning constraints and land use interfacing issues, such as aircraft and helicopter noise issues, were also considered in site shortlisting together with other factors.

7.2 Site Shortlisting with SEA/Environmental Considerations

To facilitate the site shortlisting study with respect to SEA/environmental considerations, environmental performance indicators (EPIs) were established to compare the relative environmental performances of the longlisted sites. The proposed strategic EPIs have considered many factors including environmental legislations, standards and guidelines, e.g. Hong Kong Planning Standard and Guidelines (HKPSG), Water Pollution Control Ordinance (WPCO), Environmental Impact Assessment Ordinance (EIAO), Air Pollution Control Ordinance (APCO), Waste Disposal Ordinance (WDO), Noise Control Ordinance (NCO), and other relevant guidelines/guidance notes/studies/references, as appropriate.

A qualitative assessment was then carried out by assessing the potential environmental issues/constraints of each longlisted site and the likelihood of

possible mitigation measures to address the issues/constraints. Based upon the site shortlisting exercise, the following five nearshore reclamation sites are shortlisted:

(1) Siu Ho Wan

(2) Sunny Bay

(3) Southwest Tsing Yi

(4) Ma Liu Shui

(5) Lung Kwu Tan

Besides, the site shortlisting exercise has identified there is great development potential for artificial islands in the central waters that worth further exploring. As regards the option of artificial islands, we have reviewed the eastern waters, the central waters and the western waters of Hong Kong. The eastern waters are of high ecological value whilst the western waters are already heavily constrained by a number of major infrastructure projects. The central waters however are relatively less ecologically sensitive. There are many other considerations that need to be studied further (e.g. impacts on fairways, anchorage areas, ferry routes, port operation, marine traffic, water flow and water quality, ecology, fisheries, etc.) in a strategic way. Despite the great development potential for artificial islands in the central waters, the approximate location and extent of artificial islands could only be ascertained subject to further studies.

The shortlisted nearshore reclamation sites and artificial islands in the central waters were taken forward for consultation in PE2, while the remaining sites may be studied further if opportunities arise in the future.

It is worth to highlight that among these 5 shortlisted nearshore reclamation sites, despite some of them may have relatively higher environmental concerns (e.g. Siu Ho Wan and Lung Kwu Tan), they were still selected into the shortlist because of other considerations such as less impact to local community, better location and accessibility, higher development potential and flexibility, higher cost effectiveness, engineering feasibility, etc.

For the reclamation sites which were not selected into the shortlist, some were found to have significant environmental impacts (e.g. Tai Po Kau, Beaufort Island, Lamma Quarry, Tuen Mun Area 27 (Sam Shing)), while some sites will have moderate environmental impact (e.g. Wu Kai Sha, Tai Lam Chung, Sheun Wan, Tseung Kwan O Area 131, Tseung Kwan O East, Sandy Bay, Shek O Quarry, Silver Mine Bay North, Silver Mine Bay South, Tsing Lung Tau, Tuen Mun Area 40) and some have relatively less environmental impact (e.g. Tai Po Industrial Estate). For those sites with moderate or less environmental impact, they were not selected into the longlist because for other considerations such as significant impact to local community, low development potential, poor location or accessibility, small reclamation area, other planning and engineering constraints, etc.

7.3 Shortlisted Sites, Artificial Islands and Key Environmental Issues and Opportunities

The section provides qualitative discussion of the key environmental and other issues/constraints and opportunities of each of the shortlisted nearshore

reclamation sites and artificial islands in the central waters with reference to the broad environmental assessment.

7.3.1 Siu Ho Wan

Siu Ho Wan is located at a strategic location in North Lantau.It is near the Airport, can link up with major trunk road and infrastructure (e.g. North Lantau Highway, railway lines, Tuen Mun Chek Lap Kok Link, Hong Kong Link Road, etc.), and is close to many tourism spots. It offers synergy with other developments in North Lantau including the nearby Tung Chung new town. The proposed area of reclamation is 133ha, potentially for the development of residential uses, GIC and commercial provisions.

Impact on Environment

- Environmental impact may be high. There will be potential ecological impact on Chinese White Dolphin habitats as Chinese White Dolphin hotspot is in extremely close proximity to the site. Other critical environmental impacts include, air quality, noise, water quality, ecology (e.g. potential ecological impact on committed Marine Park at The Brothers, Tai Ho Stream SSSI, mangrove areas and horseshoe crabs, etc.), fisheries, landscape and visual. Detailed site survey and ecological monitoring is required to investigate the potential impact on Chinese White Dolphins in nearshore area.

Potential Constraints

- Potential land use interface issues with the nearby various NIMBY facilities and industrial uses, such as sewage treatment works, waste facilities, etc., and hazard to life issues from the water treatment works and chlorine transshipment dock in the vicinity.
- Aircraft and helicopter noise; road traffic noise and vehicular emission from North Lantau Highway; and railway noise from the nearby MTR networks.

Major environmental and non-environmental opportunities and constraints for this shortlisted site are shown in **Figure 8**.

7.3.2 Sunny Bay

Sunny Bay is located at a strategic location in North Lantau. It is close to the Airport, can link up with major truck road and infrastructure (e.g North Lantau Highway, railway lines and station, Tuen Mun Chek Lap Kok Link, etc.), and is close to many tourism spots. Sunny Bay has the potential for recreational and tourism development as already identified in the OZP. It offers synergy with other developments in North Lantau. The proposed area of reclamation is 75ha, potentially for the development of recreational and commercial uses.

Impact on Environment

- Moderate environmental impact is anticipated. There will be potential ecological impact on Chinese White Dolphin habitats as some sightings of Chinese White Dolphins were recorded in nearby area. Other critical

environmental impacts include air quality, noise, water quality, ecology (e.g. potential ecological impact on committed Marine Park at The Brothers, mangrove areas and seagrass bed, etc.), fisheries, landscape and visual. Detailed site survey and ecological monitoring is required to investigate the potential impact on Chinese White Dolphins in nearshore area.

Potential Constraints

- Aircraft and helicopter noise; road traffic noise and vehicular emission from North Lantau Highway; and railway noise from the nearby MTR networks.

Major environmental and non-environmental opportunities and constraints for this shortlisted site are shown in **Figure 9**.

7.3.3 Southwest Tsing Yi

Southwest Tsing Yi is located in area with good access to existing transportation nodes. Given the strategic location of this site, this site has great potential of integrated development with adjacent area. The proposed area of reclamation is 106ha, potentially for the development of residential uses with a range of complementary GIC, commercial and open space provision.

However, its development potential is limited by adjacent industrial land uses. At present, the site is suitable for extending port facilities to create a regional logistic node. Residential or other development is also feasible if all oil depots/terminals in the vicinity and the adjacent industrial land uses are relocated, releasing a large piece of prime land and benefiting the entire district. Under this Study, this site has been assessed on the assumption that all existing oil depots/terminals and industrial land uses in the surrounding areas are relocated.

Impact on Environment

- Ecological impact is anticipated to be relatively low comparing to other sites. Critical environmental impact includes air quality, noise, and hydrodynamic and water quality due to impact on HATS discharge.

Potential Constraints

- Five oil depots/terminals in the vicinity constituting hazard to life issues requiring relocation of these PHIs before development of the site; and land use interfacing issues with the nearby various NIMBY and industrial facilities/uses.
- Road traffic noise and vehicular emission from Cheung Tsing Highway and Tsing Yi Road, and marine emission around Ma Wan Channel.

Major environmental and non-environmental opportunities and constraints for this shortlisted site are shown in **Figure 10**.

7.3.4 Ma Liu Shui

Ma Liu Shui can provide valuable land in developed district for residential development near Shatin New Town. It is located within area with good access to

existing / future traffic and railway network (e.g. Tolo Highway, Tate's Cairn Highway, Shing Mun Tunnel, Shatin Heights Tunnel, Lion Rock Tunnel, Tate's Cairn Tunnel, MTR East Rail, and future SCL, etc.). It can also provide community facilities to meet the needs in the district. The reclamation will create synergy with the development proposals of the adjacent site released by relocating the Sha Tin Sewage Treatment works to rock cavern. The proposed area of reclamation is 47ha, potentially for the development of residential uses and other beneficial uses including community and recreational facilities.

Impact on Environment

- Ecological impact is anticipated to be relatively low comparing to other sites. Critical environmental impacts include air quality, noise, water quality, landscape and visual.

Potential Constraints

- Social impacts on the Chinese University and residential development in Ma On Shan.
- Potential land use interface issues, including odour and helicopter noise from the nearby sewage treatment works and Marine Police's helipad.
- Road traffic noise and vehicular emission from Tolo Highway and Tate's Cairn Highway, and railway noise from MTR East Rail.

Major environmental and non-environmental opportunities and constraints for this shortlisted site are shown in **Figure 11**.

7.3.5 Lung Kwu Tan

Lung Kwu Tan is easily accessible via existing traffic networks (e.g. Lung Kwu Tan Road, Lung Fu Road, Lung Mun Road, etc.) which have spare capacity with further road widening. It presents opportunity for relatively large-scale reclamation (200 – 300 ha) site which is suitable for comprehensive planning. This proposed reclamation site has the potential for a science and business park, residential uses with complementary GIC facilities and local open space.

Impact on Environment

- Environmental impact may be high. There will be potential ecological impact on Chinese White Dolphin habitats as the site is close to Chinese White Dolphin hotspot. Other critical environmental impacts include air quality, noise, water quality, ecology (e.g. ecological impacts on Sha Chau & Lung Kwu Chau Marine Park, committed Marine Park at The Brothers, SSSI at Lung Kwu Chau, Tree Island and Sha Chau, horseshoe crabs, etc.), fisheries, landscape and visual. Detailed site survey and ecological monitoring is required to investigate the potential impact on Chinese White Dolphins in nearshore area.
- Potential disturbance on the Lung Kwu Tan Valley SSSI (400m away) and butterfly hotspot in the proximity.

Potential Constraints

- Potential land use interface issues with the nearby various NIMBY and industrial uses/facilities, such as two power stations, cement plants, steel mill, different waste facilities, aviation fuel facility, other industrial uses, etc.
- Road traffic noise and vehicular emission from Lung Kwu Tan Road and Lung Mun Road, and marine emission around Urmston Road.

Major environmental and non-environmental opportunities and constraints for this shortlisted site are shown in **Figure 12**.

7.3.6 Artificial Islands

The option of artificial islands in the central waters, between Hong Kong Island and Lantau can generally avoid shorelines of high ecological value and, if artificial islands are provided with suitable transport infrastructure, they could be extended as new development areas from the current urban areas.

Impact on Environment

- Environmental impact may be high at some locations in the central waters. There would be potential hydrodynamic and water quality impacts from the artificial islands due to impact on HATS discharge. Artificial islands would also potentially affect different ecological and fisheries significant/sensitive species/areas, such as finless porpoises, corals, fish production areas, proposed and potential marine parks, coastal protection areas, etc. It is recommended to conduct a separate comprehensive strategic study on building artificial islands in the central waters covering different aspects, including hydrodynamic and water quality, ecological and fisheries impacts, etc. to derive the extent, shape, broad land use and transport infrastructure of the artificial islands.

Potential Constraints

- There are a number of fairways, anchorage areas, ferry routes in the central waters, and the impacts of artificial islands on port operation, marine traffic and water flow etc.

7.3.7 Potential Cumulative Environmental Impacts

Apart from the individual environmental issues of the respective shortlisted site, cumulative environmental impacts are anticipated from the shortlisted sites, particularly those reclamation sites in Western Waters where there are Chinese White Dolphin habitats, existing and committed marine parks, SSSIs, and other ecological/fisheries sensitive areas; many ongoing/committed/planned/proposed major development projects undertaken, such as airport 3rd runway, Tung Chung new town extension development, Hong Kong – Zhuhai – Macau bridge-related developments. There are also different land use interfacing issues anticipated from the shortlisted sites as various NIMBY/industrial and incompatible facilities/uses are located in the vicinity. Detailed assessments on the cumulative impacts to the environment are needed.

The central waters is the major channel for water flows from Pearl River Estuary through the Hong Kong marine territory towards the South China Sea. There are different ecological/fisheries sensitive species/areas and water sensitive receivers around the central water areas, such as finless porpoises, corals, fish production areas, beaches, etc. The artificial islands in the central waters would potentially bring significant hydrodynamic effects on the water flow within Hong Kong and dispersion of the treated effluent from the Harbour Area Treatment Scheme (HATS) outfall. There are different water sensitive receivers around the central water areas, such as beaches at the southern HK Island, corals and beaches at the Lamma Island, etc. Detailed assessments on the cumulative impacts on hydrodynamic/water quality and ecology/fisheries are needed.

Apart from different land use interfacing and hazard to life issues with regard to the existing land uses of Tsing Yi, the shortlisted reclamation to the southwest of Tsing Yi near Ma Wan Channel and Kap Shui Mun would have potential cumulative impact together with any other new/proposed developments on the hydrodynamic and water flow of Ma Wan Channel, Kap Shui Mun and any other relevant channels and also cumulative impact on HATS discharge potentially affecting ecological and fisheries sensitive habitats/areas and water sensitive receivers in the vicinity.

There may also be potential cumulative implications on the land use interfacing of the shortlisted reclamation near Tolo Harbour together with the adjacent site of the Sha Tin STW planned for relocation to the rock cavern with the nearby traffic networks, and potential impact on hydrodynamic and water flow of the Tolo Harbour.

8 Stage 2 Public Engagement

8.1 Stage 2 Public Engagement

Stage 2 Public Engagement (PE2) was conducted between 21 March 2013 and 21 June 2013. The aim of PE2 was to seek public views on the possible land uses for the shortlisted sites as well as the areas of concern to be addressed in future technical studies.

Methodology used in collecting and collating views during Stage 2 Public Engagement includes qualitative feedback in form of response to open-ended questions in questionnaires, gists of discussions at public forums or other PE meetings, written submissions in form of individual letters or emails, signature campaigns or petitions organized by interest parties, etc.

To enhance the public awareness of the PE2 exercise and to encourage public participation, a series of PE activities including public forums and roving exhibitions were organized. The consultation document, PE2 Digest, was widely disseminated to the public at various outlets including District Offices, roving exhibition counters and public forums. A web version of the PE2 Digest was uploaded onto the Study website.

The Panel on Development of the Legislative Council was consulted on 23 April 2013. Government representatives attended a Special Meeting of the Panel on 1 June 2013 to listen to the views of the deputation. Seven District Councils, in which constituencies the five potential nearshore reclamation sites, three Rock Cavern Development (RCD) sites and artificial islands in the central islands are located, were also consulted, amongst other stakeholders including green groups, local concerns groups and residents' groups.

The Stage 2 Public Engagement Report and Executive Summary can be found on the Study website http://www.landsupply.hk.

8.2 SEA/Environmental Comments

Environmental – related Public Comments collected during Stage 2 Public Engagement include:

a) Impact on marine ecology including encroachment on habitats of CWDs, ecological conservation, potential impact on the landscape or habitats along the shorelines, etc. were common major SEA/environmental concerns shared by the potential near shore reclamation sites and artificial islands in the central waters.

b) Major SEA/environmental concerns as regards Lung Kwu Tan included impact of NIMBY facilities nearby, air pollution near the development sites, deterioration of seawater quality, etc.

c) Major SEA/environmental concerns as regards Siu Ho Wan included noise pollution near the development sites, deterioration of seawater quality, encroachment on nearby conservation areas, etc.

d) Major SEA/environmental concerns as regards Sunny Bay deterioration of seawater quality, noise pollution near the development sites, air pollution near the development sites,etc.

e) Major SEA/environmental concerns as regards Tsing Yi Southwest included noise pollution near the development sites, air pollution near the development sites, and deterioration of seawater quality, etc.

f) Major SEA/environmental concerns as regards Ma Liu Shui included impact on cultural heritage, air pollution near the development sites, affecting water flow, deterioration of seawater quality, noise pollution near the development sites, increased flooding risk at Shing Mun River, etc.

g) Major SEA/environmental concerns as regards possible artificial islands in the central waters included deterioration of seawater quality, air pollution near the development site, impact on fisheries, noise pollution near the development site, affecting water flow, impact on cultural heritage.

8.3 Other Comments

Other Public Comments collected during Stage 2 Public Engagement include:

a) Land reserve, residential development (in particular public rental housing), recreational or leisure facilities and public parks were the four land uses that received most support among those providing feedback on reclamation;

b) The large volume of combined resistance to all potential reclamation sites, mostly generated from the signature campaigns and petitions and Facebook campaign organized by a group of Chinese University Hong Kong students but also from some other sources, could indicate considerable resistance to any of the five reclamation sites. On the other hand, the combined acceptance of all five reclamation sites expressed by some construction industry groups suggested an economic argument for reclamation (e.g. in terms of creating jobs) which was supported in some quarters of the community;

c) There were fewer specific objections to Sunny Bay and Tsing Yi Southwest. The number of specific objections to artificial islands in the central waters was also comparatively small.

8.4 SEA/Environmental Observations

Major SEA/Environmental observations made in Stage 2 Public Engagement are summarized below:

a) The potential impact on marine ecology, including encroachment on habitats of Chinese White Dolphins (CWDs), and ecological conservation were two common themes of concerns about reclamation sites (including artificial islands in the central waters).

b) There was particularly strong resistance against the proposed reclamation at Ma Liu Shui as conveyed through feedback questionnaires collected in Ma On Shan as well as signature campaigns and petitions (SCPs) organized by some local groups and residents' groups. SCPs and Facebook

campaign (FB) initiated by the Student Union of The Chinese University of Hong Kong (CUHK) also contributed to such resistance. Concerns about the environment including coastal landscape and habitats, marine ecology, air and noise pollution, water flow and quality of Shing Mun River were the key SEA/environmental reasons behind the resistance.

c) Many respondents made their views explicit through SCPs expressing combined opposition to all five near shore reclamation sites. The SCPs and FB organised by the Student Union of CUHK constituted the biggest source of combined rejection of all five near shore reclamation sites.

d) Acceptance of the reclamation sites was also expressed in the form of combined acceptance of all sites through SCPs, with some groups in the construction industry providing the bulk of such combined acceptance.

e) A considerable number of general views towards the proposals without naming specific sites were received. The potential impact on the habitats of CWDs, concerns about ecological conservation, and potential impact on landscape or habitats along shorelines were most frequently mentioned among the main reasons cited against reclamation proposals in general.

f) There were relatively fewer specific objections to Sunny Bay and Tsing Yi Southwest. The number of specific objections to artificial islands in the central waters was also comparatively small.

9 Strategic Environmental Monitoring and Audit (SEM&A) Plans

The follow-up actions / mitigation measures which would be implemented by the relevant departments / parties are presented in this section. It should be reminded that some of the follow-up actions / mitigation measures are initially recommended for further consideration. The common follow-up works to be taken for the shortlisted sites are shown below:

Common follow-up works for the shortlisted sites and artificial islands

Potential Site	Major Follow-up Work/Action
5 shortlisted nearshore reclamation sites 1. Siu Ho Wan 2. Sunny Bay 3. Southwest Tsing Yi 4. Ma Liu Shui 5. Lung Kwu Tan Artificial Islands in the central waters	Technical assessments and studies, such as planning and engineering feasibility studies, statutory EIAs (Reclamations under Item C of Schedule 2 and engineering feasibility studies of urban development projects with study areas more than 20 ha or involving population of more than 100 000 under Schedule 3 are Designated Projects under the EIAO. There would also be other potential Designated Project elements on the shortlisted reclamation sites and artificial islands.), etc.

9.1 Siu Ho Wan

Further specific assessments and follow-up works for this Shortlisted Site shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Cumulative environmental impact assessment to assess quantitatively the total environmental effects of the potential reclamations on ecology, fisheries, air quality and water quality;
- Site Specific Chinese White Dolphin Field Monitoring Survey;
- Liaison with AFCD on the Committed Marine Park in The Brothers;
- Confirmation from HKAA/CAD on the NEF 25 Contour for the 3-runway for the land use proposal of the reclamation;
- Negotiation with WSD for the relocation of Sham Shui Kok Chlorine Transshipment Dock, or any other possible measure to settle the hazard to life issue; and
- Negotiation with WSD for the relocation of Siu Ho Wan Water Treatment Works, or any other possible measure to settle the hazard to life issue.
- Key issues particularly to be assessed including ecological impacts and land use interfacing issues with different NIMBY/industrial facilities/uses in the vicinity.

9.2 Sunny Bay

Further specific assessments and follow-up works for this Shortlisted Site shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Cumulative environmental impact assessment to assess quantitatively the total environmental effects of the potential reclamations on ecology, fisheries, air quality and water quality;
- Site Specific Chinese White Dolphin Field Monitoring Survey;
- Confirmation from HKAA/CAD on the NEF 25 Contour for the 3-runway for the land use proposal of the reclamation; and
- Liaison with AFCD on the Committed Marine Park in The Brothers.
- Key issues particularly to be assessed including ecological impacts and aircraft noise impact.

9.3 Southwest Tsing Yi

Further specific assessments and follow-up works for this Shortlisted Site shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Negotiation with Shell HK Ltd., Chevron HK Ltd., ExxonMobil HK Ltd and Sinopec (HK) Ltd. on the relocation of the five Potentially Hazardous Installations (PHIs) for comprehensive planning and development of the sites with the reclamation, or any other possible measure to settle the hazard to life issue;
- Negotiation with Yiu Lian Dockyards Ltd., Hong Kong United Dockyards Ltd. and Euroasia Dockyard Enterprise and Development Ltd., and Tien Chu Industrial Centre etc. on the relocation of the various NIMBY/industrial uses/facilities for comprehensive planning and development of the sites with the reclamation;
- Liaison with relevant bureau/ departments for coordination with the proposals of Container Terminal 10 study; and
- Key issues particularly to be assessed including hydrodynamic and water quality impact due to potential impact on HATS discharge, cumulative air quality impact including marine emission, etc.

9.4 Ma Liu Shui

Further specific assessments and follow-up works for this Shortlisted Site shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Negotiation with Marine Police for the relocation of Marine Police headquarter (including helipad) for comprehensive planning and development of the reclamation with the site of Marine Police headquarter;

- Negotiation with DSD for comprehensive planning and development of the reclamation with the site of Shatin STW; and
- Key issues particularly to be assessed including road traffic noise, railway noise, etc.

9.5 Lung Kwu Tan

Further specific assessments and follow-up works for this Shortlisted Site shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Cumulative environmental impact assessment to assess quantitatively the total environmental effects of the potential reclamations on ecology, fisheries, air quality and water quality;
- Site Specific Chinese White Dolphin Field Monitoring Survey; and
- Archaeological field survey.
- Key issues particularly to be assessed including ecological impacts and land use interfacing issues with different NIMBY/industrial facilities/uses in the vicinity, including power stations, ecopark, cement plant, steel mill, landfills, different waste facilities, etc.

9.6 Artificial Islands in Central Waters

Further specific assessments and follow-up works for artificial islands in the central waters shall be conducted to resolve and address the strategic key environmental issues discussed in previous sections which are highlighted in the following:

- Strategic studies on the engineering feasibility and environmental acceptability of the proposed artificial islands in the central waters; and
- Key issues particularly to be assessed including hydrodynamic and water quality impacts, ecological and fisheries impacts, etc.

10 Conclusion

SEA has been carried as part of the study to provide environmental consideration in each step of the site selection process. SEA has identified that the potential sites for reclamation have different environmental issues/constraints and there are no highly environmental favourable potential reclamation sites. Each of the shortlisted sites and artificial islands for reclamation has different potential environmental issues/constraints and opportunities. In the future, further studies/assessments, statutory EIAs and town planning processes will be needed to confirm the environmental acceptability of these different shortlisted sites for reclamation and artificial islands before their construction programmes commence.

10.1 Site Selection Process

Apart from other considerations, the study involved SEA to take into account environmental consideration throughout the site selection process of reclamation sites, including the following:

(a) In the territorial constraint mapping exercise, 48 pre-longlisted reclamation sites were identified taking into account environmental "Stop Areas" and "Constrained Areas" and avoiding different environmental significant/sensitive areas which are prohibited for development.

(b) In the longlisting stage, 27 longlisted reclamation sites were identified with reference to the environmental-related site selection criteria consulted in the Stage 1 PE, including environmental impacts and benefits and planning/land use considerations.

(c) In the broad technical assessment stage, broad environmental assessment was carried out on the 27 longlisted reclamation sites to identify the key environmental issues/constraints and possible mitigation measures.

(d) In the site shortlisting stage, the 27 longlisted reclamation sites were further evaluated and compared with reference to the broad environmental assessment findings adopting some indicators on environmental performance and eastern, central and western waters were compared. Five nearshore reclamation sites were shortlisted and artificial islands in central waters were identified for the Stage 2 PE.

10.2 Shortlisted Sites and Artificial Islands for Reclamation

The five shortlisted nearshore reclamation sites are:

- Siu Ho Wan
- Sunny Bay
- Southwest Tsing Yi
- Ma Liu Shui
- Lung Kwu Tan

Besides, the site shortlisting exercise has identified there is great development potential for artificial islands in the central waters that worth further exploring. As regards the option of artificial islands, we have reviewed the eastern waters, the central waters and the western waters of Hong Kong. The eastern waters are of high ecological value whilst the western waters are already heavily constrained by a number of major infrastructure projects. The central waters however are relatively less ecologically sensitive. There are many other considerations that need to be studied further (e.g. impacts on fairways, anchorage areas, ferry routes, port operation, marine traffic, water flow and water quality, ecology, fisheries, etc.) in a strategic way. Despite the great development potential for artificial islands in the central waters, the approximate location and extent of artificial islands could only be ascertained subject to further studies.

It is worth to highlight that throughout the entire site selection process under the Study, the SEA identified different environmental and planning issues of all the sites assessed. Due to environmental/planning constraints throughout the territory and other consideration factors, these shortlisted nearshore reclamation sites and artificial islands in the central waters also have different potential environmental issues. Reclamations (under Item C of Schedule 2) and engineering feasibility studies of urban development projects with study areas more than 20 ha or involving population of more than 100 000 (under Schedule 3) are Designated Projects under the EIAO. There would also be other potential Designated Project elements on the shortlisted reclamation sites and artificial islands. It is important that the shortlisted sites and artificial islands in central waters are required to go through planning and engineering feasibility studies, statutory processes under the EIAO, statutory planning processes under the Town Planning Ordinance, further detailed studies/assessments, etc. and public consultations in future to confirm their environmental acceptability. The SEA has identified the following key potential environmental issues of the shortlisted sites and artificial islands in the central waters:

Siu Ho Wan

- Impacts on different ecological significant/sensitive species/areas, such as Chinese White Dolphins, committed marine park, SSSI, horseshoe crabs, mangroves, etc. and fisheries areas;
- Different land use interfacing issues given many NIMBY/industrial uses/facilities located in the vicinity;
- Hazard to life issues given water treatment works and chorine transshipment dock located in the vicinity of Siu Ho Wan;
- Road traffic noise and vehicular emission and railway noise from the nearby major road and rail networks; and
- Aircraft and helicopter noise.

Sunny Bay

- Impacts on ecological significant/sensitive species/areas, such as Chinese White Dolphins, committed marine park, mangroves and seagrass bed, etc.;
- Aircraft and helicopter noise; and

- Road traffic noise and vehicular emission and railway noise from the nearby major road and rail networks.

Southwest Tsing Yi

- Hazard risk given five oil depots/terminals located in the vicinity requiring relocation of these PHIs before development of the site;
- Different land use interfacing issues given many NIMBY/ industrial uses/facilities located in the vicinity;
- Hydrodynamic and water quality impacts due to impact on HATS discharge;
- Marine emission; and
- Road traffic noise and vehicular emission from the nearby major road networks.

Ma Liu Shui

- Odour from the STW and helicopter noise from the marine helipad in the vicinity requiring comprehensive development of the site together with the STW and marine police's helipad; and
- Road traffic noise and vehicular emission and railway noise from the nearby major road and rail networks.

Lung Kwu Tan

- Impacts on different ecological significant/sensitive species/habitats, such as Chinese White Dolphins, marine park and committed marine park, SSSIs, horseshoe crabs, etc. and fisheries areas;
- Different land use interfacing issues given many NIMBY/industrial uses/facilities located in the vicinity;
- Marine emission; and
- Road traffic noise and vehicular emission from the nearby major road networks.

Artificial Islands in Central Waters

- Impacts on different ecological/fisheries significant/sensitive species/areas, such as finless porpoises, corals, fish production areas, proposed and potential marine parks, coastal protection areas, etc.; and
- Hydrodynamic and water quality impacts due to impact on HATS discharge.

These shortlisted nearshore reclamation sites and the artificial islands in the central waters were taken forward for consultation in PE2, while the remaining sites may be studied further if opportunities arise in the future.

10.3 Works Ahead of the Shortlisted Sites and Artificial Islands for Reclamation

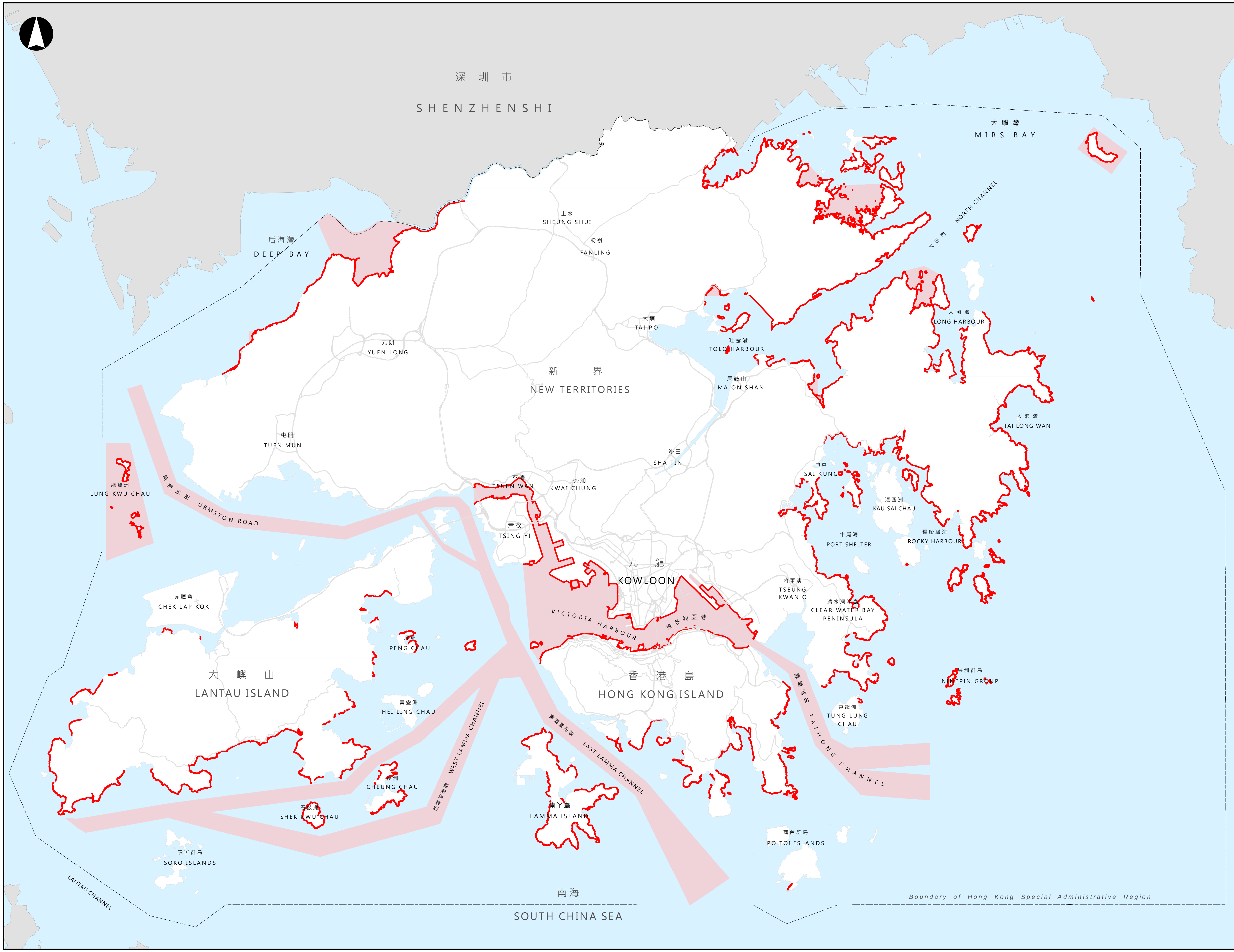
The shortlisted reclamation sites will also potentially give rise to cumulative impacts to the environment. To address public concerns regarding potential cumulative impacts due to potential reclamation sites, their potential impacts on Chinese White Dolphin habitats and other ecological/ fisheries sensitive areas,

their cumulative environmental impacts with various ongoing/ committed/ planned/ proposed development projects, such as airport 3rd runway, Tung Chung new town extension development, Hong Kong – Zhuhai – Macau bridge-related developments, etc., different land use interfacing issues potentially induced, and other potential issues/constraints, the government has commissioned separate consultancies to undertake assessments and explore mitigation measures in advance:

- CWD monitoring in shallow water of Lung Kwu Tan, Siu Ho Wan and Sunny Bay;
- Cumulative Environmental Impact Assessment (CEIA) Study for the Three Potential Nearshore Reclamation Sites in the Western Waters of Hong Kong to assess quantitatively the total environmental effects of the potential reclamations on ecology, fisheries, air quality and water quality; and
- Strategic Study on Artificial Islands in the central waters, which is yet to be commissioned.

With reference to the findings of the above separate consultancies and other projects, the government will carry out further detailed studies including planning and engineering feasibility studies and will go through the statutory processes under the EIAO and the Town Planning Ordinance, etc. and public consultations for the shortlisted reclamation sites and artificial islands in the central waters, during which the details of the development proposals including the reclamation extent, development parameters, mitigation works, etc. will be developed and further discussed with the public.

Figures



深 圳 市
SHENZHENSHI
后海灣
DEEP BAY
大鵬灣
MIRS BAY
SHEUNG SHUI
FANLING
NORTH CHANNEL
TAI PO
TOLO HARBOUR
LONG HARBOUR
YUEN LONG
新 界
NEW TERRITORIES
MA ON SHAN
TAI LONG WAN
TUEN MUN
SHA TIN
SAI KUNG
LUNG KWU CHAU
URMSTON ROAD
TSUEN WAN
KWAI CHUNG
KAU SAI CHAU
TSING YI
PORT SHELTER
ROCKY HARBOUR
九 龍
KOWLOON
TSEUNG KWAN O
CHEK LAP KOK
CLEAR WATER BAY PENINSULA
VICTORIA HARBOUR
PENG CHAU
NINEPIN GROUP
大 嶼 山
LANTAU ISLAND
香 港 島
HONG KONG ISLAND
HEI LING CHAU
TUNG LUNG CHAU
WEST LAMMA CHANNEL
EAST LAMMA CHANNEL
TATHONG CHANNEL
CHEUNG CHAU
SHEK KWU CHAU
LAMMA ISLAND
PO TOI ISLANDS
SOKO ISLANDS
LANTAU CHANNEL
南海
SOUTH CHINA SEA
Boundary of Hong Kong Special Administrative Region

LEGEND

Marine Stop Area

Sensitive Shoreline

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Issue	Date	By	Chkd	Appd
P4	19-01-12	JT		

Metres

0 1,250 2,500 5,000 7,500

ARUP

Level 5 Festival Walk
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
Hong Kong

Client

Civil Engineering and Development Department

Job Title

Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title

STATUTORILY PROTECTED AND CONSTRAINT AREAS

Scale

1:200,000

Drawing Status

Draft

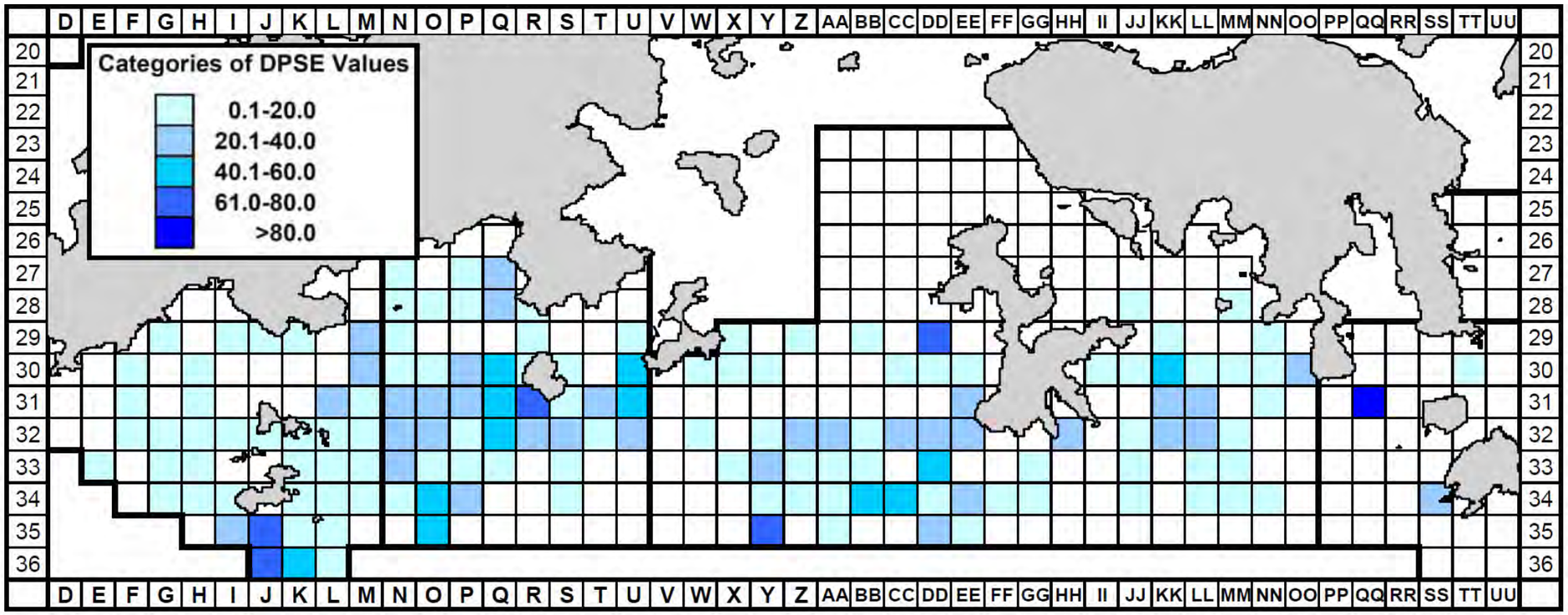
Job No

Fig 1

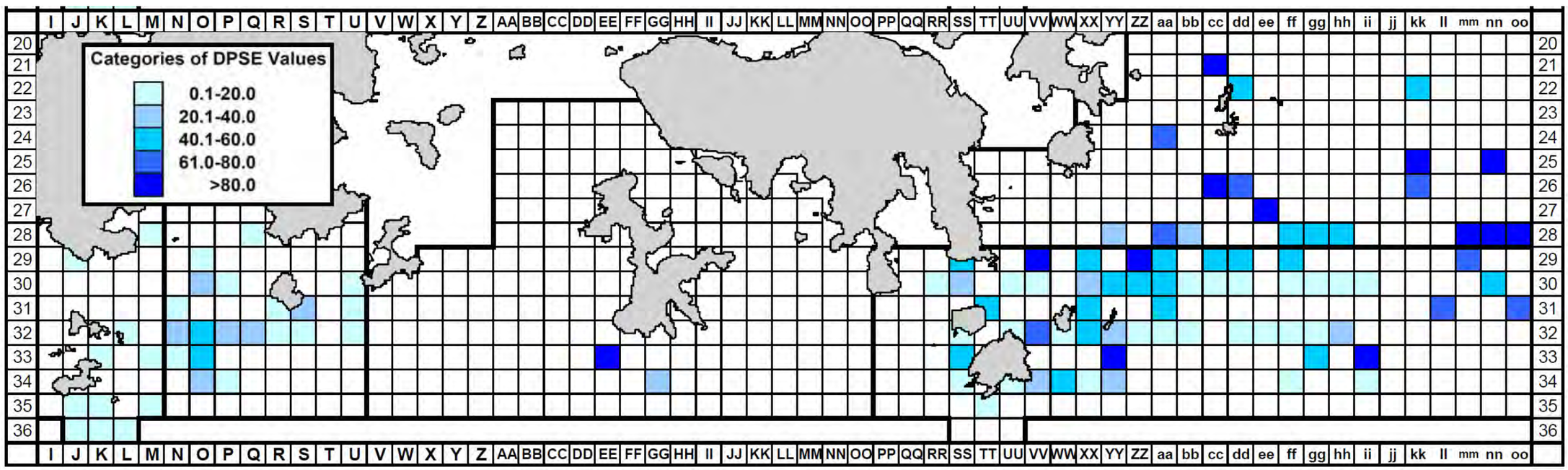
Issue

P4

Dry Season (Dec. - May)



Wet Season (Jun. - Nov.)



Notes:

[1] Density of finless porpoises with corrected survey effort per km^2 in southern waters of Hong Kong during dry season (top) wet season (bottom) using data collected during 2004-12 (DPSE = no. of porpoises per 100 units of survey effort)

[2] Source: Samuel,Y.K. HUNG (2013), Monitoring of Marine Mammals in Hong Kong Waters, Final Report (1 April 2012 to 31 March 2013)

Issue	Date	By	Chkd	Appd
D3	2013-09-04	SC	KL	ST

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Kowloon Tong, Kowloon
Hong Kong

Client

Civil Engineering and Development Department

Job Title

Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title

Locations of Finless Porpoise Hotspots

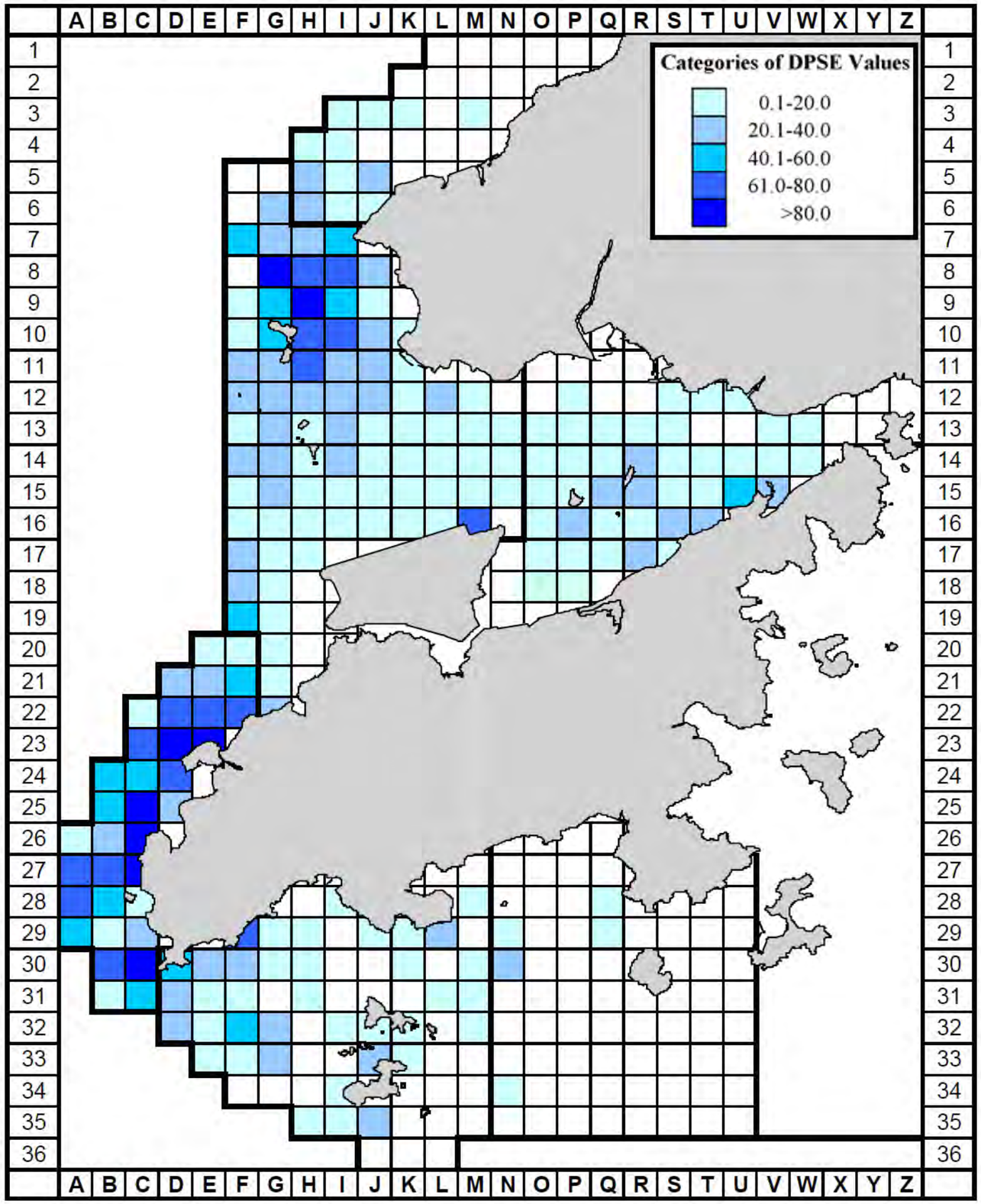
Scale at A3

As Shown

Drawing Status

Draft

Job No		Issue
217499	**Fig 2**	D3



Notes:
[1] Density of Chinese white dolphins with corrected survey effort per km^2 in waters around Lantau Island during 2008-12 (number within grids represent "DPSE" = no. of dolphins per 100 units of survey effort)
[2] Source: Samuel,Y.K. HUNG (2013), Monitoring of Marine Mammals in Hong Kong Waters, Final Report (1 April 2012 - 31 March 2013)

Issue	Date	By	Chkd	Appd
D3	2013-09-04	SC	KL	ST

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Civil Engineering and Development Department

Job Title
Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title
Locations of Chinese White Dolphin Habitats

Scale as A3
As Shown

Drawing Status
Draft

Job No **217499** | **Fig 3** | Issue **D3**

深 圳 市
SHENZHEN SHI

新 界
NEW TERRITORIES

九 龍
KOWLOON

大 嶼 山
LANTAU ISLAND

香 港 島
HONG KONG ISLAND

BOUNDARY OF HONG KONG SPECIAL ADMINISTRATIVE REGION

Legend

- Juveniles Horseshoe Crab Site (AFCD, 2011)[1]
- Juveniles Horseshoe Crab Site (Morton, 1993)[2]
- Seagrass [3]
- Mangrove [4]
- Key Coral Area [5]
- Mangrove [6]
- Key Coral Area [7]
- Marine Park
- Marine Reserve
- Committed Marine Park
- Proposed Marine Park
- Potential Marine Park
- Fish Culture Zone
- Geopark

NEF 25 Contours [8]

- Two-Runway Option
- Three-Runway Option

Source:
[1] AFCD Website, Horseshoe crabs in Hong Kong
[2] Morton (1999), Asian Marine Biology 16 (Based on survey between March 1993 to June 1998)
[3] AFCD website, Seagrass in Hong Kong
[4] AFCD Website, Mangroves in Hong Kong: Distribution
[5] Maunsell Consultants Asia Ltd. (2007) EIA-134/2007
[6] ERM (2009), 2008 update of Terrestrial Habitat Mapping and Ranking Based on Conservation Value
[7] AFCD (2005), Field Guide to Hard Corals of Hong Kong
[8] Airport Authority Hong Kong (2011), Hong Kong International Airport Master Plan 2030: Noise Impact

Issue	Date	By	Chkd	Appd
D1	2013-06-11	SC	KL	ST

Kilometers
0 1.25 2.5 5 7.5

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Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title
Major Environmental Constraints

Scale at A3
1:200,000

Drawing Status
Draft

Job No
217499

Fig 4

Issue
D1

SHENZHEN

NEW TERRITORIES

KOWLOON

LANTAU ISLAND

HONG KONG ISLAND

Boundary of Hong Kong Special Administrative Region

Legend

- Ship Wreck
- Marine Facility
- Submarine Cable
- Submarine Pipeline
- Anchorage
- Utility Area
- Existing Landfill Site
- Restored Landfill Site
- Existing Fill Bank
- Dumping Ground
- Exhausted Sand Borrow Pit for Disposal of Uncontaminated Sediment
- Open Sea Disposal Area for Disposal of Uncontaminated Sediment

Sand Deposit

- Extent Prior to Dredging
- With Constraints on Dredging
- Not Being Used on Environmental or Other Grounds

Contained Pit for Disposal of Contaminated Sediment

- Active CPDCS (Contained Pit for Disposal of Contaminated Sediment)
- Filled & Already Fully Capped CPDCS
- Planned CPDCS
- Airport Exclusion Zone
- Tunnel
- Central - Wan Chai Reclamation
- Proposed CT10
- Proposed HKBCF / TM-CLKL Reclamations
- Proposed IWMF Reclamation
- Proposed Third Runway Reclamation
- Proposed Tung Chung New Town Extension Area
- Proposed North Lantau Leisure & Entertainment Node
- Proposed Lantau Logistics Park
- Proposed Lantau Theme Park
- Proposed Lamma Marina / Resort
- Proposed Cross Bay Link Reclamation
- Proposed HKLR Reclamation
- Proposed Windfarm
- Proposed Cross Bay Link
- Proposed DSD HATS Tunnel
- Proposed Windfarm Cable Route
- Proposed HZMB

Water Depth (metre below Chart Datum)

- < 0.0
- 0.1 - 10.0
- 10.1 - 20.0
- 20.1 - 50.0

Issue	Date	By	Chkd	Appd
P0	2014-02-25	SC		

Metres: 0, 1,250, 2,500, 5,000, 7,500

ARUP

Level 5 Festival Walk
80 Tat Chee Avenue,
Kowloon Tong, Kowloon
Hong Kong

Client

Civil Engineering and Development Department

Job Title

Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title

Major Non-environmental Marine Constraints

Scale at A3

1:200,000

Drawing Status

Preliminary

Job No		Issue
217499	Fig 5	P0

LEGEND

🟧	Reclamation Site under Investigation / Study (by CEDD)
🟩	Reclamation Site under Investigation / Study (by Others)
🟨	Pre-Longlisted Reclamation and CDF Sites
🟥	Marine Stop Area
—	Sensitive Shoreline

***Note:* The size and shape of reclamation sites shown on this plan are hypothetical assumptions for the purpose of BTA carried out at the corresponding stage of site selection process only. They do not represent any future design to be implemented.**

Issue	Date	By	Chkd	Appd
P9	19-01-12	JT		

Metres
0 1,250 2,500 5,000 7,500

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80 Tat Chee Avenue,
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Hong Kong

Client
Civil Engineering and Development Department

Job Title
Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title
PRE-LONGLISTED RECLAMATION SITES

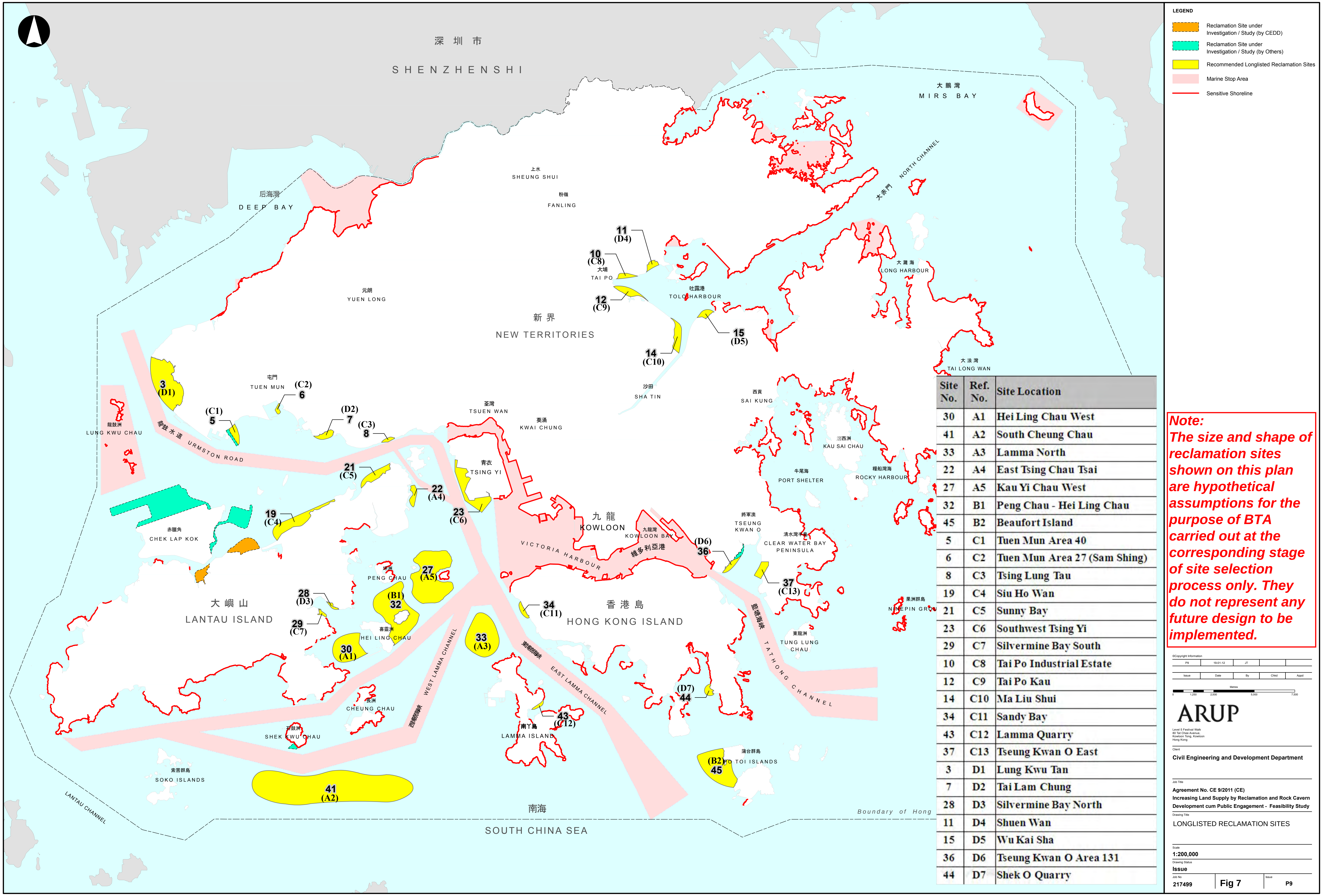
Scale
1:200,000

Drawing Status
Issue

Job No
217499

Fig 6

Issue
P9



Site No.	Ref. No.	Site Location
30	A1	Hei Ling Chau West
41	A2	South Cheung Chau
33	A3	Lamma North
22	A4	East Tsing Chau Tsai
27	A5	Kau Yi Chau West
32	B1	Peng Chau - Hei Ling Chau
45	B2	Beaufort Island
5	C1	Tuen Mun Area 40
6	C2	Tuen Mun Area 27 (Sam Shing)
8	C3	Tsing Lung Tau
19	C4	Siu Ho Wan
21	C5	Sunny Bay
23	C6	Southwest Tsing Yi
29	C7	Silvermine Bay South
10	C8	Tai Po Industrial Estate
12	C9	Tai Po Kau
14	C10	Ma Liu Shui
34	C11	Sandy Bay
43	C12	Lamma Quarry
37	C13	Tseung Kwan O East
3	D1	Lung Kwu Tan
7	D2	Tai Lam Chung
28	D3	Silvermine Bay North
11	D4	Shuen Wan
15	D5	Wu Kai Sha
36	D6	Tseung Kwan O Area 131
44	D7	Shek O Quarry

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Issue	Date	By	Chkd	Appd
P9	19-01-12	JT		

Metres: 0 – 1,250 – 2,500 – 5,000 – 7,500

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80 Tat Chee Avenue,
Kowloon Tong, Kowloon
Hong Kong

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Job Title
Agreement No. CE 9/2011 (CE)
Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Drawing Title
LONGLISTED RECLAMATION SITES

Scale
1:200,000

Drawing Status
Issue

Job No **217499** | **Fig 7** | Issue **P9**

OPPORTUNITIES

1. The Proposed reclamation could create a prime waterfront development sites.
2. The existing Siu Ho Wan stabling yard may allow for the development of an MTR station.
3. The proposed reclamation at Siu Ho Wan enjoys proximity to the regional GIC facilities within Tung Chung.
4. The proposed reclamation can provide solution space for facilities which Tung Chung is not currently equipped.
5. The proposed reclamation enjoys good accessibility with the connected to the existing North Lantau Highway and the proposed Tuen Mun – Chek Lap Kok Link and the Hong Kong Zhuhai – Macao Bridge and other strategic transport links.
6. If the existing Sewage Treatment Works could be relocated to rock cavern, the proposed reclamation could be developed in a coherent manner with the RCD-released site as well as the possible topside development above the stabling yard.

CONSTRAINTS

A. The hinterland of Siu Ho Wan is occupied by a number of NIMBY/industrial uses /facilities posing different land use interfacing issues, eg. Siu Ho Wan Sewage and Water Treatment Works. A planned Organic Waste Treatment Facility (OWTF) is also located within the Siu Ho Wan hinterland.

B. The proposed reclamation abuts the existing Refuse Transfer Station (RTS) to its east. Appropriate measures will need to be implemented to address the interface between the future development upon the reclamation and the RTS.

C. Two columbarium developments are also proposed to be located east of the proposed reclamation which may have potential impact on traffic conditions on the proposed reclamation.

D. The existing Siu Ho Wan Water Treatment Works (WTW) is a Potentially Hazardous Installation (PHI) with a Consultation Zone of 1,000m in radius. Given potential hazard to life issue, if the WTW is not relocated it may undermine the development potential of part of the proposed reclamation.

E. The existing Airport Height Restrictions will have an impact on the development potential of the proposed reclamation. Future development on the proposed reclamation will be limited to building heights ranging from 80mPD to 100mPD.

F. The adjacent transport infrastructure will have potential impacts on the future development of the reclamation. These potential impacts include air pollution and traffic noise generated by the North Lantau Highway.

G. The proposed reclamation is located within proximity to a committed Marine Park. Further reclamation beyond that proposed is unlikely.

H. The proposed Road P1 will have to be provided to sustain the development of Siu Ho Wan. However, the proposed road may occupy a rather significant portion of the reclamation.

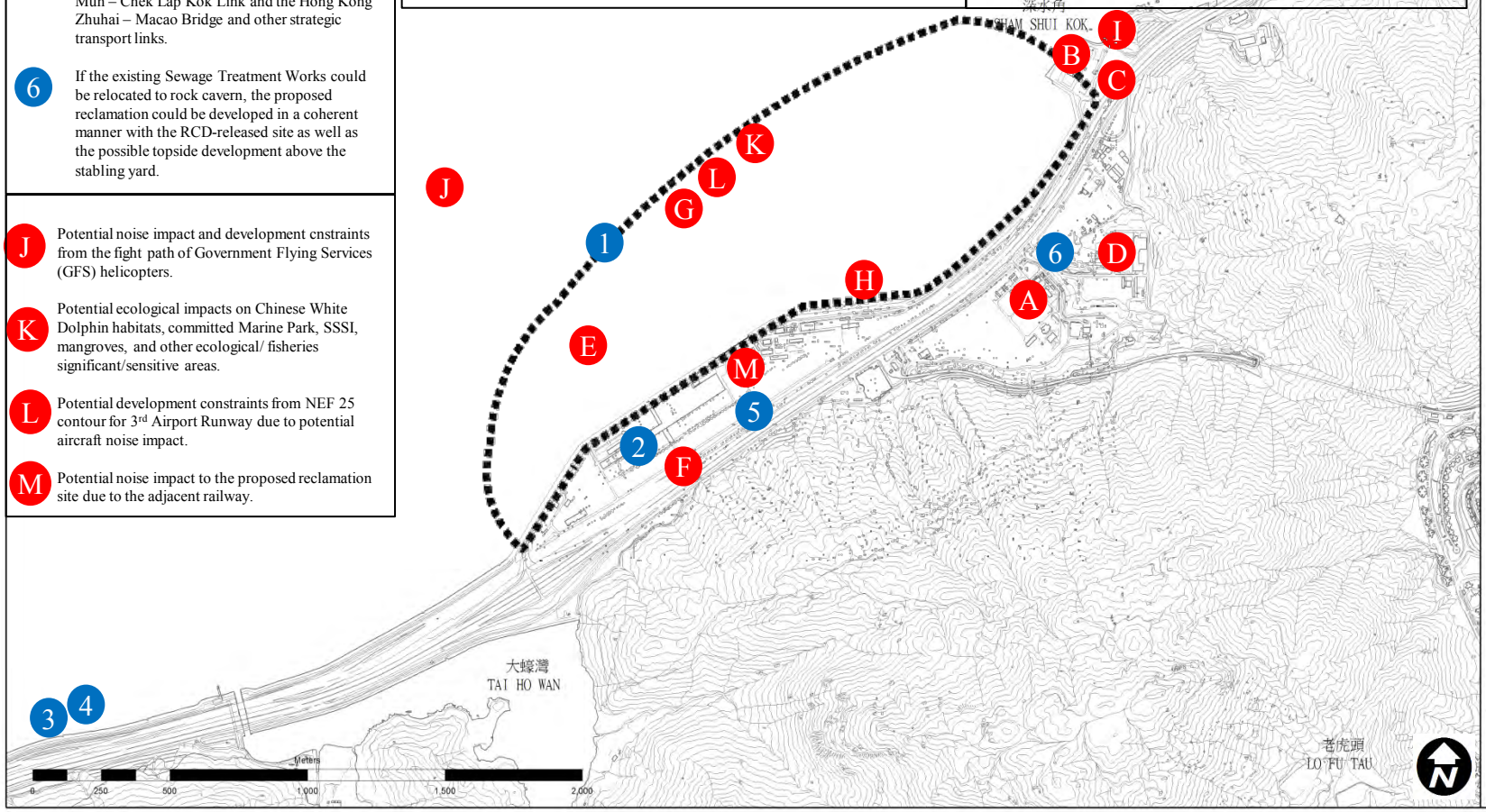
I. Given potential hazard to life issue, the Existing Sham Shui Kok Chlorine Transshipment Dock may also impact the development potential of the reclamation site.

J. Potential noise impact and development cnstraints from the fight path of Government Flying Services (GFS) helicopters.

K. Potential ecological impacts on Chinese White Dolphin habitats, committed Marine Park, SSSI, mangroves, and other ecological/ fisheries significant/sensitive areas.

L. Potential development constraints from NEF 25 contour for 3rd Airport Runway due to potential aircraft noise impact.

M. Potential noise impact to the proposed reclamation site due to the adjacent railway.



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Civil Engineering and Development Department

Agreement No. 9/2011 Increasing Land Supply by Reclamation and Rock Cavern Development cum Public Engagement - Feasibility Study

Opportunities and Constraints for Siu Ho Wan

1 : 15000

217499

Fig 8

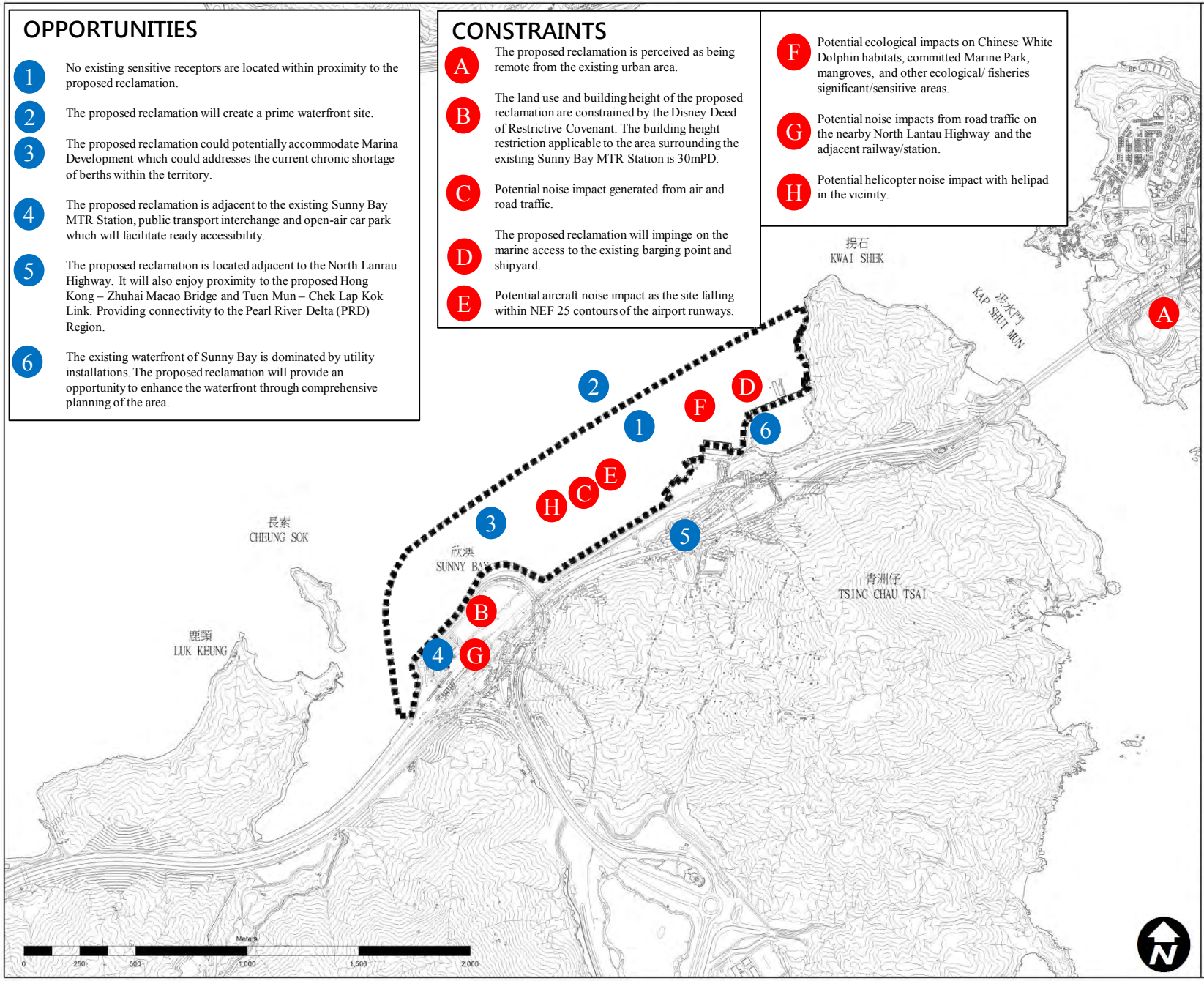
P1

OPPORTUNITIES

1. No existing sensitive receptors are located within proximity to the proposed reclamation.
2. The proposed reclamation will create a prime waterfront site.
3. The proposed reclamation could potentially accommodate Marina Development which could addresses the current chronic shortage of berths within the territory.
4. The proposed reclamation is adjacent to the existing Sunny Bay MTR Station, public transport interchange and open-air car park which will facilitate ready accessibility.
5. The proposed reclamation is located adjacent to the North Lanrau Highway. It will also enjoy proximity to the proposed Hong Kong – Zhuhai Macao Bridge and Tuen Mun – Chek Lap Kok Link. Providing connectivity to the Pearl River Delta (PRD) Region.
6. The existing waterfront of Sunny Bay is dominated by utility installations. The proposed reclamation will provide an opportunity to enhance the waterfront through comprehensive planning of the area.

CONSTRAINTS

- A The proposed reclamation is perceived as being remote from the existing urban area.
- B The land use and building height of the proposed reclamation are constrained by the Disney Deed of Restrictive Covenant. The building height restriction applicable to the area surrounding the existing Sunny Bay MTR Station is 30mPD.
- C Potential noise impact generated from air and road traffic.
- D The proposed reclamation will impinge on the marine access to the existing barging point and shipyard.
- E Potential aircraft noise impact as the site falling within NEF 25 contours of the airport runways.
- F Potential ecological impacts on Chinese White Dolphin habitats, committed Marine Park, mangroves, and other ecological/ fisheries significant/sensitive areas.
- G Potential noise impacts from road traffic on the nearby North Lantau Highway and the adjacent railway/station.
- H Potential helicopter noise impact with helipad in the vicinity.



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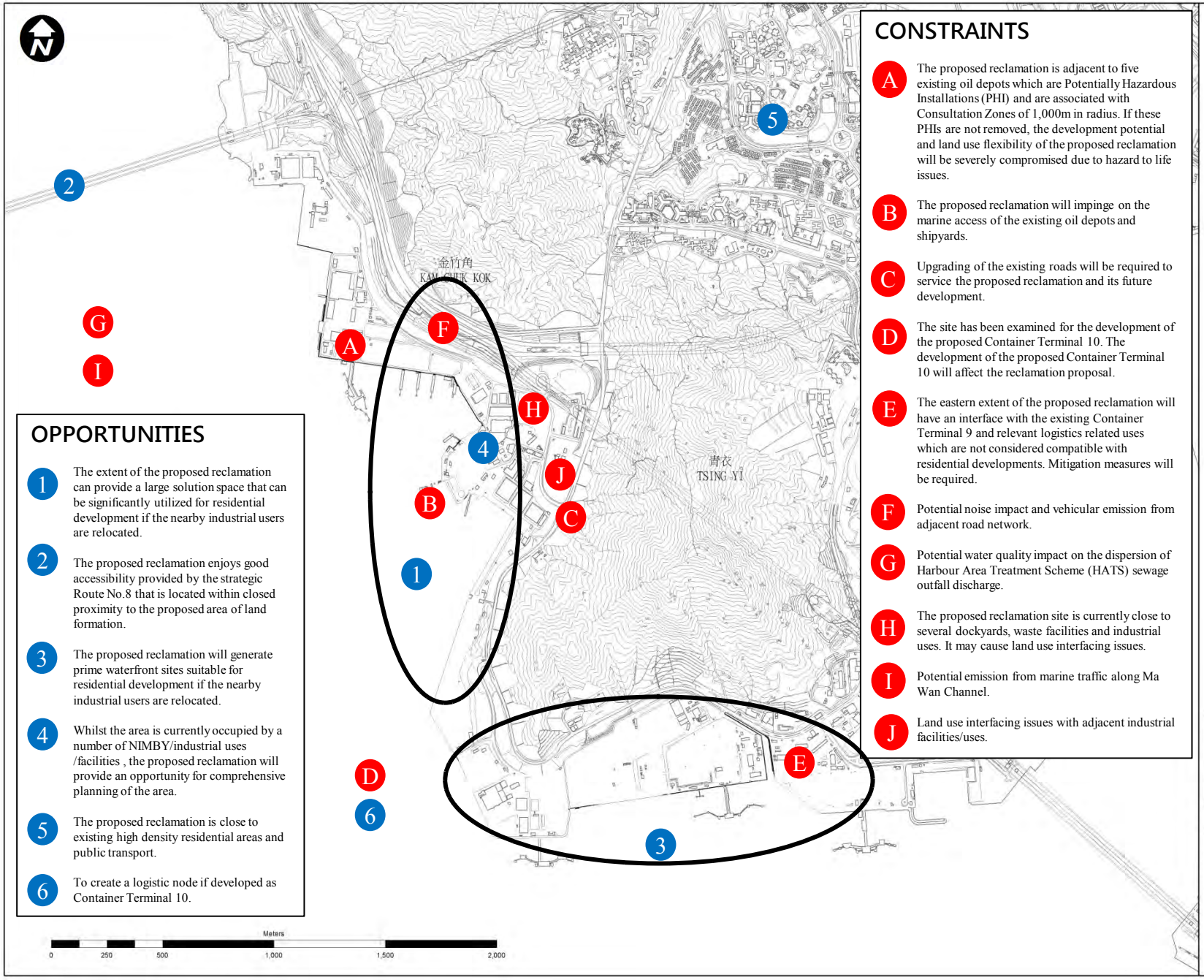
Opportunities and Constraints for Sunny Bay

1 : 15000

217499

Fig 9

P1



CONSTRAINTS

A The proposed reclamation is adjacent to five existing oil depots which are Potentially Hazardous Installations (PHI) and are associated with Consultation Zones of 1,000m in radius. If these PHIs are not removed, the development potential and land use flexibility of the proposed reclamation will be severely compromised due to hazard to life issues.

B The proposed reclamation will impinge on the marine access of the existing oil depots and shipyards.

C Upgrading of the existing roads will be required to service the proposed reclamation and its future development.

D The site has been examined for the development of the proposed Container Terminal 10. The development of the proposed Container Terminal 10 will affect the reclamation proposal.

E The eastern extent of the proposed reclamation will have an interface with the existing Container Terminal 9 and relevant logistics related uses which are not considered compatible with residential developments. Mitigation measures will be required.

F Potential noise impact and vehicular emission from adjacent road network.

G Potential water quality impact on the dispersion of Harbour Area Treatment Scheme (HATS) sewage outfall discharge.

H The proposed reclamation site is currently close to several dockyards, waste facilities and industrial uses. It may cause land use interfacing issues.

I Potential emission from marine traffic along Ma Wan Channel.

J Land use interfacing issues with adjacent industrial facilities/uses.

OPPORTUNITIES

1 The extent of the proposed reclamation can provide a large solution space that can be significantly utilized for residential development if the nearby industrial users are relocated.

2 The proposed reclamation enjoys good accessibility provided by the strategic Route No.8 that is located within closed proximity to the proposed area of land formation.

3 The proposed reclamation will generate prime waterfront sites suitable for residential development if the nearby industrial users are relocated.

4 Whilst the area is currently occupied by a number of NIMBY/industrial uses /facilities , the proposed reclamation will provide an opportunity for comprehensive planning of the area.

5 The proposed reclamation is close to existing high density residential areas and public transport.

6 To create a logistic node if developed as Container Terminal 10.

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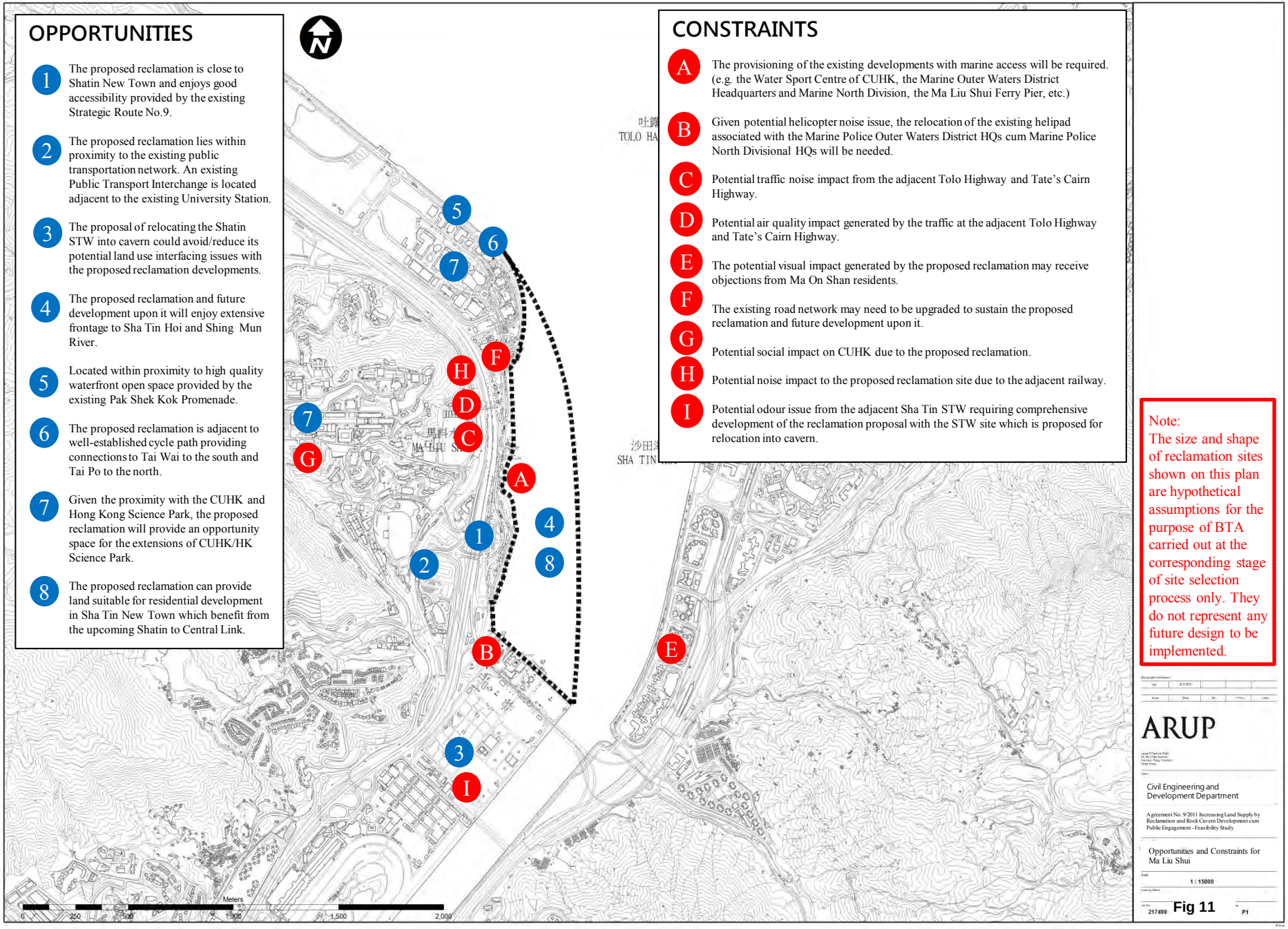
Opportunities and Constraints for Southwest Tsing Yi

1 : 15000

217499

Fig 10

P1



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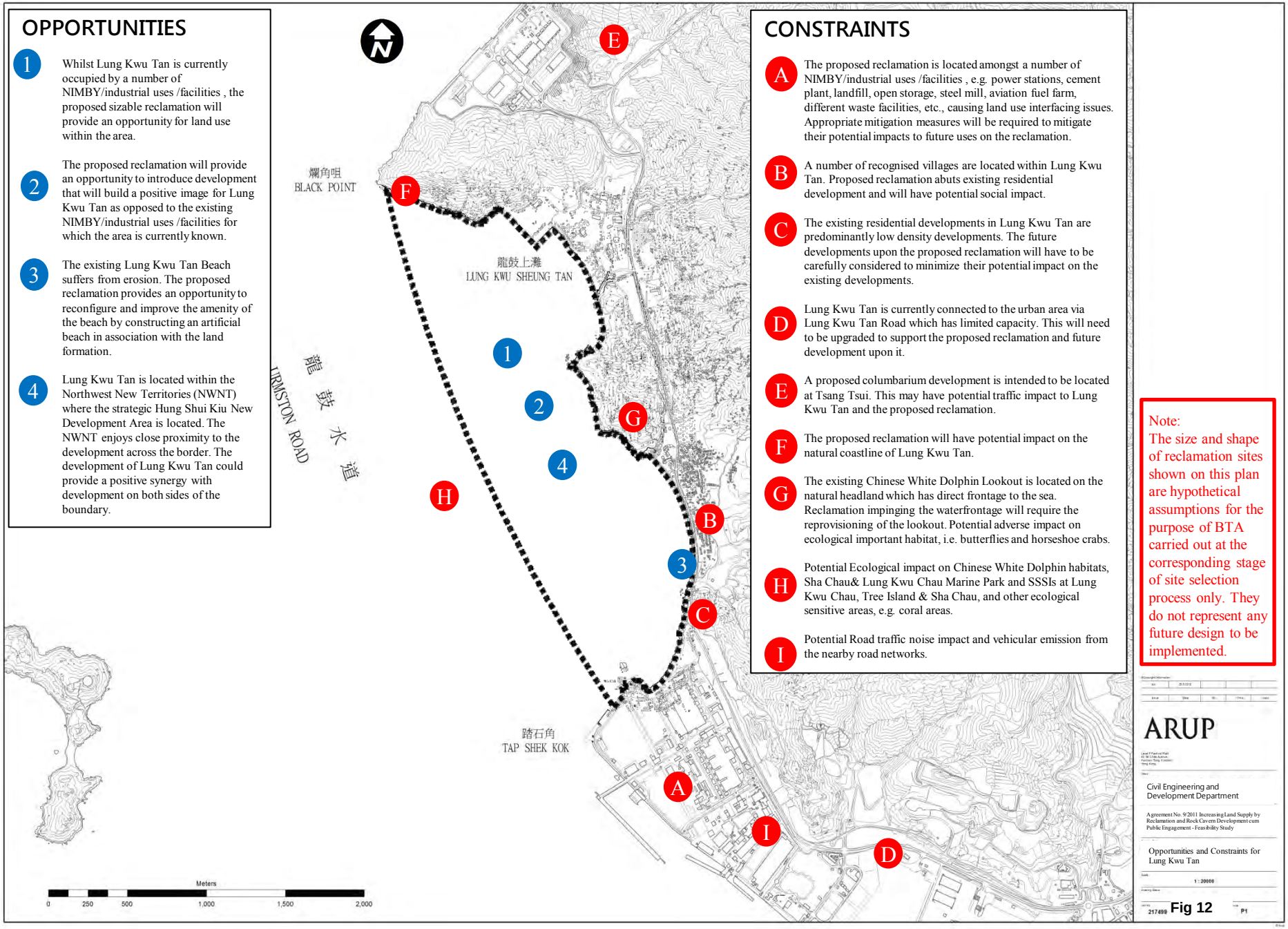
Opportunities and Constraints for Ma Liu Shui

1 : 15000

217499

Fig 11

P1


OPPORTUNITIES
1 Whilst Lung Kwu Tan is currently occupied by a number of NIMBY/industrial uses /facilities , the proposed sizable reclamation will provide an opportunity for land use within the area.
2 The proposed reclamation will provide an opportunity to introduce development that will build a positive image for Lung Kwu Tan as opposed to the existing NIMBY/industrial uses /facilities for which the area is currently known.
3 The existing Lung Kwu Tan Beach suffers from erosion. The proposed reclamation provides an opportunity to reconfigure and improve the amenity of the beach by constructing an artificial beach in association with the land formation.
4 Lung Kwu Tan is located within the Northwest New Territories (NWNT) where the strategic Hung Shui Kiu New Development Area is located. The NWNT enjoys close proximity to the development across the border. The development of Lung Kwu Tan could provide a positive synergy with development on both sides of the boundary.
CONSTRAINTS
A The proposed reclamation is located amongst a number of NIMBY/industrial uses /facilities , e.g. power stations, cement plant, landfill, open storage, steel mill, aviation fuel farm, different waste facilities, etc., causing land use interfacing issues. Appropriate mitigation measures will be required to mitigate their potential impacts to future uses on the reclamation.
B A number of recognised villages are located within Lung Kwu Tan. Proposed reclamation abuts existing residential development and will have potential social impact.
C The existing residential developments in Lung Kwu Tan are predominantly low density developments. The future developments upon the proposed reclamation will have to be carefully considered to minimize their potential impact on the existing developments.
D Lung Kwu Tan is currently connected to the urban area via Lung Kwu Tan Road which has limited capacity. This will need to be upgraded to support the proposed reclamation and future development upon it.
E A proposed columbarium development is intended to be located at Tsang Tsui. This may have potential traffic impact to Lung Kwu Tan and the proposed reclamation.
F The proposed reclamation will have potential impact on the natural coastline of Lung Kwu Tan.
G The existing Chinese White Dolphin Lookout is located on the natural headland which has direct frontage to the sea. Reclamation impinging the waterfrontage will require the reprovisioning of the lookout. Potential adverse impact on ecological important habitat, i.e. butterflies and horseshoe crabs.
H Potential Ecological impact on Chinese White Dolphin habitats, Sha Chau& Lung Kwu Chau Marine Park and SSSIs at Lung Kwu Chau, Tree Island & Sha Chau, and other ecological sensitive areas, e.g. coral areas.
I Potential Road traffic noise impact and vehicular emission from the nearby road networks.
爛角咀
BLACK POINT
龍鼓上灘
LUNG KWU SHEUNG TAN
龍鼓水道
IRMSTON ROAD
踏石角
TAP SHEK KOK
Meters
0 250 500 1,000 1,500 2,000
Note:
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Opportunities and Constraints for Lung Kwu Tan
1 : 20000
217499
P1

Fig 12