



**中國建築工程(香港)有限公司**  
CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD

**Contract No. HY/2009/15**

**Shatin to Central Link – Protection Works at Causeway Bay Typhoon Shelter**

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**CONTRACT HY/2009/15**

**CENTRAL – WAN CHAI BYPASS**

**TUNNEL (CAUSEWAY BAY TYPHOON SHELTER SECTION)**

**SHATIN TO CENTRAL LINK PROTECTION WORKS (ENTRUSTED TO HY/2009/15)**

## **Silt Curtain Deployment Plan**

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## **1.0 Introduction**

The purpose of this deployment plan is to illustrate the general layout, details on the design, operation and maintenance of the silt curtains to be installed for dredging and reclamation works of the entrusted works of Shatin-Central Link (SCL) protection works at the Causeway Bay Typhoon Shelter (CBTS) as recommended in the approved EIA report (Registration No.: AEIAR-159/2011).

## **2.0 List of EP Conditions**

2.1 The relevant Environmental Permit Conditions are listed as follows for ease of references.

EP-416/2011	Description
Condition 2.7	Submission of Silt Curtain Deployment Plan
Condition 2.9 (e)	Silt curtains shall be deployed to fully enclose the closed grab dredger during any dredging operation
Condition 2.9 (g)	Any gaps in the seawall that may need to be provided for marine access shall be shielded by silt curtains to control sediment plume dispersion away from the site.

## **3.0 Key Factors Considered during Design for Proposed Silt Curtain**

The following factors have been taken into account during the preparation for this silt curtain deployment plan:

- 3.1 The seawall construction and reclamation, including dredging and filling works will be carried out at the CBTS. The CBTS is surrounded by three breakwaters and the shorelines of the Hong Kong Island, leaving only two openings in the northeast and northwest corners as navigation accesses.
- 3.2 The existing North Breakwater of the CBTS would serve as a barrier against the migration of sediment plumes, which may be generated by the dredging operation, to the water body in the Victoria Harbour.
- 3.3 The existing one cooling water intake (i.e. the Windsor House), has been protected against any potential sediment plumes by the deployment silt screens following the stipulation in the Conditions 2.8 of the EP-416/2011.

- 3.4 Dredging of southwest corner of the Causeway Bay Typhoon Shelter is covered in the Scope of Designated Projects on FEP-04/356/2009. For silt curtain deployment during dredging operation in the South-western corner of the Causeway Bay Typhoon Shelter including Zone 1A, Zone 1B and Zone 1C, please refer to approved Silt Curtain Deployment Plan under FEP-04/356/2009.
- 3.5 Similarly, dredging of odorous sediments at the southwest corner of the Causeway Bay Typhoon Shelter is covered in the Scope of Designated Projects on FEP-04/356/2009. For dredging operation involving odorous sediments, please refer to the approved Proposal for the Removal of Odorous Sediment and Slime Attached on the Shoreline Seawall at the South-western Corner area of the CBTS under FEP-04/356/2009.
- 3.6 Dredging of southeast corner of the Causeway Bay Typhoon Shelter, known as the Temporary Mooring Area shown in Figure 2 of EP-416/2011 is covered in the Scope of Designated projects on EP-416/2011. Please refer to Appendix D for arrangement of silt curtain deployment.
- 3.7 To minimize loss of sediment affecting the water quality due to filling works, the filling works for seawall construction shall be carried out behind silt curtain(s) and any seawall gap that need to be provided for marine access shall be surrounded by silt curtain(s) as detailed shown in Appendix E.
- 3.8 The rate of dredging works at CBTS has been strictly governed by the conditions stated in Condition 2.9 (a) of EP-416/2011, i.e. 6,000m<sup>3</sup> per day.
- 3.9 It is required by the Marine Department that the waterway at the existing accesses of the CBTS shall be maintained unobstructed for the sake of convenience and safety of the shelter users.

## **4.0 Details of Proposed Silt Curtain System**

### **4.1 Details and Installation of Silt Curtain**

Taking into account of the key factors mentioned in Section 3 above, the silt curtain system to facilitate the dredging works is designed and its details are elaborated below:

- (a) The location plan of dredging areas of the designated project is shown in Appendix A.
- (b) To cater for the dynamic situation within the CBTS, silt curtain shall be set up in a way such that adequate protection towards from the nearby intakes, proper tidal flushing to circulate the embayed water and navigation safety of vessels can all be ensured during

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**Shatin to Central Link – Protection Works at Causeway Bay Typhoon Shelter**

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the dredging operation. The technical details of silt curtain for dredging works is shown in Appendix C.

- (c) Taking account of the tidal range, the station silt curtains would be extended to the seabed level as much as practicable.

#### **4.2 Maintenance for Silt Curtain**

Proper maintenance will be carried out for the proposed silt curtain system and the procedures are laid down below:

- 4.2.1 Site supervisors should be responsible to inspect the condition of the silt curtain daily during the course of marine works. An inspection checklist will be filled by the site supervisors. All completed checklists should be kept on site for record purpose. A template of checklist is attached in Appendix F.
- 4.2.2 If any silt curtain is found damaged and repairing works are considered necessary, all dredging works at location within 50m from the damaged curtain will be temporarily ceased. The silt curtain will be lifted up from sea by chain block pulley system with the aid of crane barge if necessary so that the whole/part of silt curtain (dependent on the extent of damage) will be replaced. In case of repairing any damaged floats, temporary cessation of dredging works is not necessary.
- 4.2.3 Before and during removal of the damaged silt curtain, site supervisor should closely communicate with operators of other marine plants to ensure no dredging works will be carried out in region within 50m from the location of silt curtain maintenance. The ceased dredging works will be resumed after the damaged silt curtain is satisfactorily repaired.
- 4.2.4 As a regular maintenance, refuse or debris around the silt curtain would be collected on daily basis to avoid adverse effect to marine plants as well as to the public.
- 4.2.5 Spare geotextile materials and other associated components will be stored on site for readily repairing/replacement in case of damages.

### **5.0 Schedule**

The anticipated schedule of the silt curtain deployment will be based on the tentative Works Programme in Appendix B.

### **6.0 Technical Details of Silt Curtain**

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**Shatin to Central Link – Protection Works at Causeway Bay Typhoon Shelter**

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- 6.1 “Bontec” SG110/110 woven geotextile will be used for all proposed silt curtains.
- 6.2 The technical data and previous job references of the proposed geotextile material is enclosed in Appendix C.

## **7.0 Appendices**

- 7.1 Appendix A – Location Plans of Dredging Works
- 7.2 Appendix B – Tentative Works Programme
- 7.3 Appendix C – Technical Details of Silt Curtain
- 7.4 Appendix D – Silt Curtain Deployment during Dredging Operation at Temporary Mooring Area
- 7.5 Appendix E – Silt Curtain Deployment during Reclamation Works in Zone 1A, Zone 1B and Zone 1C
- 7.6 Appendix F – Daily Checklist Template

## **Appendix A – Location Plans of Dredging Works**



港口  
H A R B O U R

銅鑼灣避風塘

CAUSEWAY BAY TYPHOON SHELTER

Zone 1B

Zone 1A

Zone 1C

貨物裝卸場  
Cargo Handling Basin

警察俱樂部  
Police Officers' Club

維多利亞公園  
Victoria Park

Legend:

 Dredging Area

 Dredging area covered in designated projects under FEP-04/356/2009 & EP-416/2011

REV	FIRST ISSUE	12/10/2011	BY	APP
	DESCRIPTION	DATE	BY	APP

Highways Department 路政署  
Major Works Project Management Office

AECOM

Contractor 中國建築工程(香港)有限公司  
CHINA STATE CONSTRUCTION ENGRG. (HONG KONG) LTD.



Contract CONTRACT NO. HY/2009/15  
SHATIN TO CENTRAL LINK –  
PROTECTION WORKS AT CBTS

Title LOCATION PLAN OF DREDGING AREA  
EP-416/2011

Drw No.	CCW/SK/1248			Rev	—
Drawn By	K.S.	Designed By	KELVIN	Checked By	KELVIN
Scale	1:3000 @ A3			Status	SKETCH
Dimension are in	METRES			COPYRIGHT RESERVED	

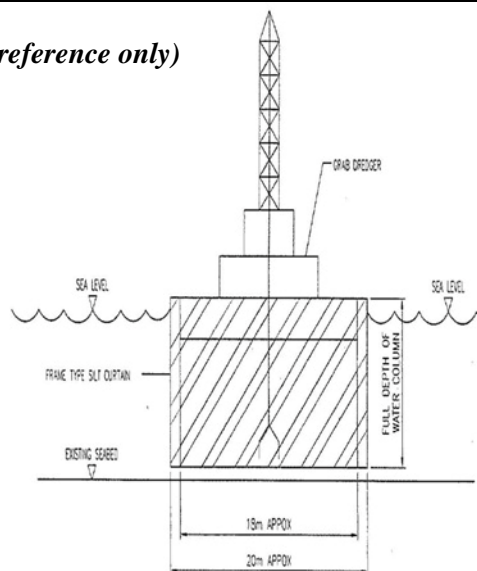


## **Appendix B – Tentative Works Programme**

		<p align="center"><b>China State Construction Engineering (Hong Kong) Ltd</b></p> <p align="center"><b>HY/2009/15 - Shatin to Central Link - Protection Works at CBTS</b></p>	 <p><b>中國建築工程(香港)有限公司</b> CHINA STATE CONSTRUCTION ENGINEERING (HONG KONG) LTD.</p>
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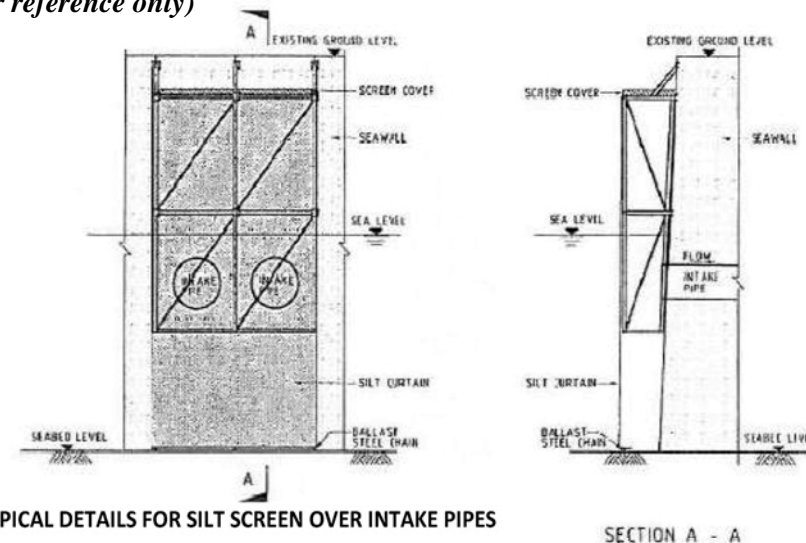
## **Appendix C – Technical Details of Silt Curtains**

(For reference only)



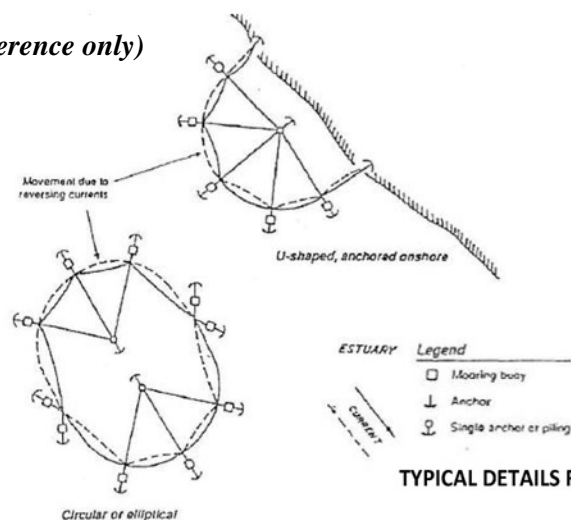
TYPICAL DETAILS FOR FRAME TYPE SILT CURTAIN DEPLOYMENT

(For reference only)



TYPICAL DETAILS FOR SILT SCREEN OVER INTAKE PIPES

(For reference only)



TYPICAL DETAILS FOR FLOATING TYPE SILT CURTAIN DEPLOYMENT

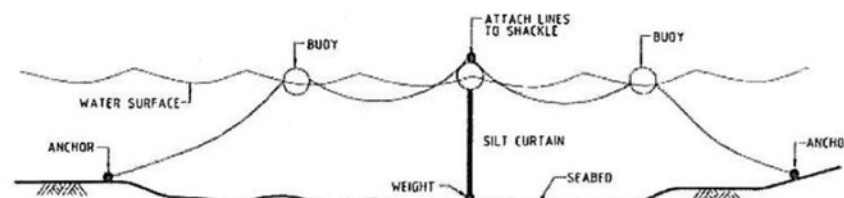


Figure 3: Typical Configurations of Silt Curtains and Silt Screens

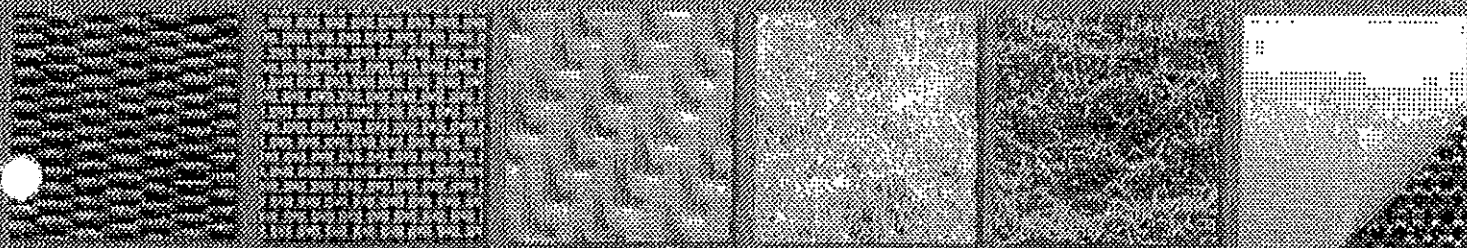
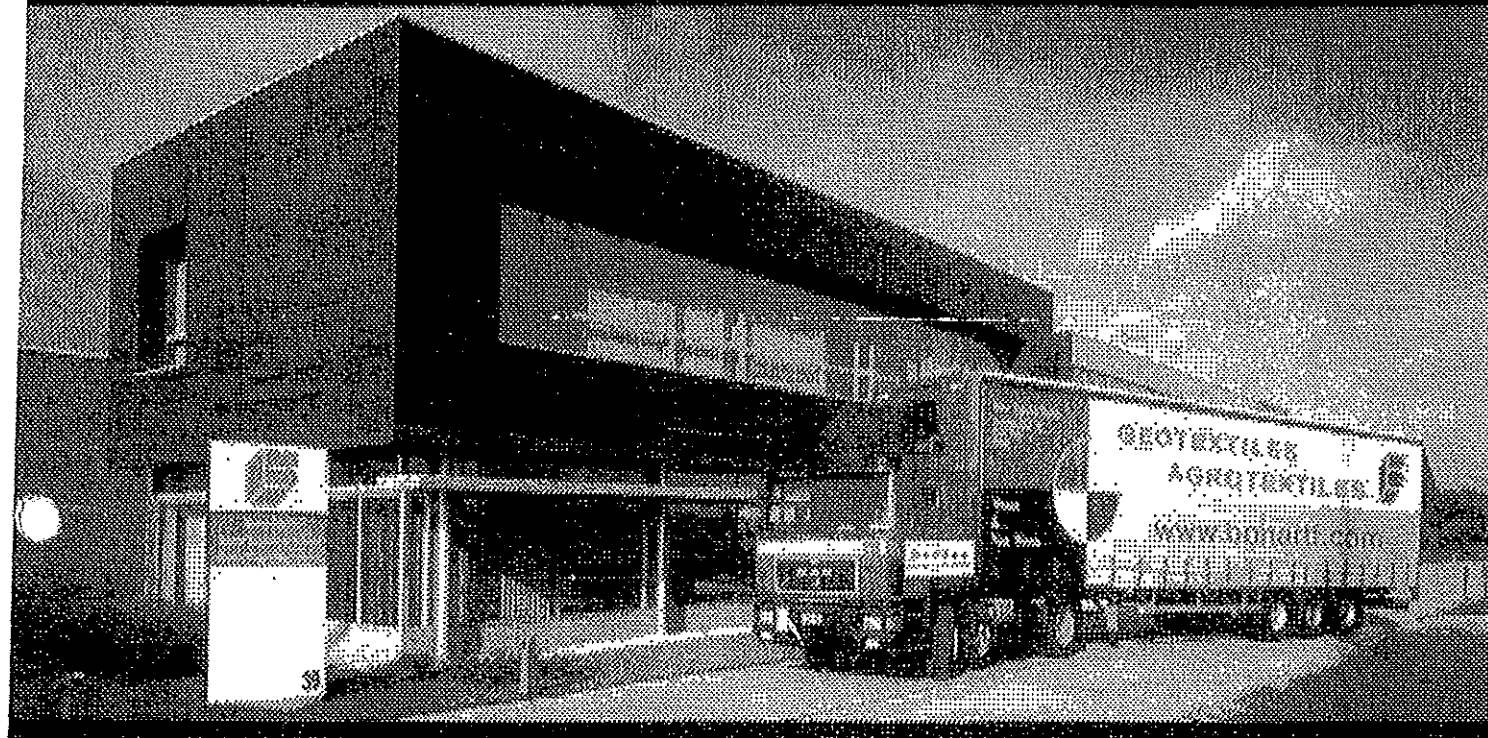
圖 3: 隔泥幕及隔泥網結構參考圖

(This figure was prepared based on Appendix 3-9 of EIA report (Register No.: AEIAR-159/2011))  
(本圖是根據環評報告(登記冊編號 AEIAR-159/2011) 附錄 3-9 編制)



Project Title : ShaTin to Central Link Protection Works at Causeway Bay Typhoon Shelter  
工程項目名稱: 沙田至中環綫位於銅鑼灣避風塘內之保護工程

Environmental Permit No. : EP-416/2011  
環境許可證編號 : EP-416/2011



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## **G AND E COMPANY LIMITED**

Room B, 13/F Cheung Lee Industrial Bldg.

9 Cheung Lee Street

Chai Wan, Hong Kong

Tel: 2508 0058

Fax: 2570 0089

website: [www.g-and-e.com](http://www.g-and-e.com)

July 9, 2010

### **OFFICIAL ANNOUNCEMENT**

I would like to inform you that geotextile Bontec SG100/100 is upgraded to SG110/110 effective immediately, and that SG100/100 has become obsolete. The performance of SG110/110 is superior to that of SG100/100.

No adjustment and adaptation are necessary to the current application, installation method, packaging and quality control assurance program with the improved properties of SG110/110.

Bonar Technical Fabrics is Europe's premier manufacturer of woven and non-woven geotextile products, with continuous commitment to quality, product development and production improvement. One of Bonar's many advantages is that they are vertically integrated. This means they have their own fiber production which helps ensure consistent product performance. Bonar also has a high production capacity with the facility located in close proximity to the Antwerp port. These translate into more efficient supply.

I have attached the manufacturer's letter here about the change for your reference. We would be happy to answer any questions that you may have.

Thank you for your kind attention.

Best regards

*Gary Ng*

Gary Ng  
General Manager

# bontec

a bonar technical fabrics product

Date: 5-Jul-10

To: G and E – Hong Kong  
Gary

From: Isabelle Ruyffelaere – 0032 52 457 487

Philippe Grimmelprez – 0032 52 457 486

E mail: nannette@g-and-e.com

Pages: 1 +

Your reference: Bontec® SG 110/110

Our reference: G&E07052010.doc

Dear Gary,

We are pleased to confirm that the old name of the Bontec® SG100/100 has been replaced with the Bontec® SG 110/110.

Bonar constantly strives to increase the performance of the products over time. Thanks to improved polymers, extrusion and weaving techniques we managed to produce stronger geotextiles with the same unit weight. Hydraulic characteristics were not affected either.

Bonar uses very strict -in house- and ISO 9001:2000 quality and ISO 14001 environmental standards (in annex) and is using electricity generated from 100 % renewable sources.

We send hereby the newest datasheet as well for your information.

Should you require any further information, please do not hesitate to contact us.  
Best regards

Philippe Grimmelprez  
Global Sales & Marketing Manager



100% POLYESTER

BONAR Technical Fabrics nv/sa  
Industrieweg 38 • B-2019 Zate • Belgium  
tel. +32 (0)52 457 486 • Fax. +32 (0)52 457 488  
E-mail: geotextiles@bonar.com

BONAR Veroef & Fabrics Ltd.  
5, Sander Street • London E20 7EX • United Kingdom  
tel. +44 (0)202 949102 • Fax. +44 (0)202 949103  
E-mail: info@bonarfabrics.com



# bontec

a bonar technical fabrics product



## SG 110/110

Woven polypropylene geotextile made of slit film tapes

Technical data sheet according to internal specifications Bonar TF: version 06 dd. 05/01/10  
Accompanying documents CE marking: version 04 dd. 05/01/10



1137-CPD-615

10

separation	filtration	reinforcement	protection	drainage

	test method	value	tolerance
<b>Mechanical properties</b>			
Tensile strength MD		110,0 kN/m	-9,9 kN/m
Tensile strength CD	EN ISO 10319	110,0 kN/m	-9,9 kN/m
Elongation MD		12,0 %	+/-2,8 %
Elongation CD	EN ISO 10319	8,0 %	+/-1,8 %
Static puncture resistance - CBR	EN ISO 12236	12,60 kN	-2,60 kN
Dynamic perforation resistance - cone drop	EN ISO 13433	10,0 mm	+2,0 mm
<b>Hydraulic properties</b>			
Water permeability normal to the plane		25x10 <sup>-3</sup> m/s	-8x10 <sup>-3</sup> m/s
Water flow normal to the plane (*)	EN ISO 11058	25 l/m <sup>2</sup> .s	-8 l/m <sup>2</sup> .s
Characteristic opening size (AOS)	EN ISO 12956	230,0 µm	+/-69,0 µm
<b>Physical properties</b>			
Thickness under 2 kPa (*)	EN ISO 9863-1	1,53 mm	+/-0,31 mm
Weight (*)	EN ISO 9864	464,0 g/m <sup>2</sup>	+/-46,4 g/m <sup>2</sup>
Composition		100 % polypropylene woven geotextile	
Durability		predicted to be durable for a minimum of 25 years in natural soil with 4 < pH < 9 and soil temperatures < 25° C	

roads	railways	foundations & retaining walls	drainage systems	erosion control systems
EN 13249:2000	EN 13250:2000	EN 13251:2000	EN 13252:2000	EN 13253:2000
reservoirs & dams	canals	Tunnels & underground structures	solid waste	liquid waste
EN 13254:2000	EN 13255:2000	EN 13256:2000	EN 13257:2000	EN 13258:2000

1. This geotextile is intended for use in both functions & applications highlighted with a bold border.
  2. It is the responsibility of all users to satisfy themselves that the above data is current.
  3. Roll dimensions are 6,25 m x 100 m. Other dimensions on demand.
  4. Bonar Technical Fabrics reserves the right to alter product specifications without prior notice.
  5. Although not guaranteed, these results do to the best of our knowledge offer a true and accurate record of the product's performance.
  6. Bonar Technical Fabrics cannot accept responsibility for the performance of these products as the conditions of use are beyond our control.
  7. Geotextile has to be covered within 2 weeks after installation.
- (\*) Not mandated characteristics for CE marking.



BONAR Technical Fabrics nv/sa, Industriestraat 39, 9240 Zele, BELGIUM - ☎ +32(0)52 457411 - ☎ +32(0)52 457495  
BONAR Yarns & Fabrics Ltd, St. Salvador Street, Dundee DD3 7EU, UK - ☎ +44(0)1382 346102 - ☎ +44(0)1382 202378

# Bonar

Date	Project	Client	Consultant	Style
Feb-05	CV/2003/06 Stanley Waterfront Improvement Project - Construction Pier and Boardwalk	Sun Fook Kong (Civil) Ltd	Civil Engineering and Development Department	SG100/100 NW10
Feb-05	99/9028 Lamma Power Station	Wai Kee (Zens) Construction & Transportation Co Ltd	Maunsell Geotechnical Services Ltd	SG100/100
Feb-05	CV/2004/02 Reconst. of Wong Shek & Ko Lau Wan Public Piers	Kin Shing Construction Co Ltd	Civil Engineering and Development Department	SG100/100
Apr-05	CV/2002/04 Penny's Bay Reclamation Stage 2	Gammon Skanska Ltd Shun Tat Construction Engineering Ltd	Scott Wilson Ltd	SG100/100 SG100/100
Apr-05	HK/12/02 CED, Central Reclamation Phase III, Engineering Works	Best Leader Engineering Ltd Leighton - China State - Van Oord Joint Venture	Atkins China Ltd	SG100/100 SG100/100
May-05	03/8013 Lamma Island to Cyberport	Leader Marine Contractors Ltd Honwin Engineering Ltd	Maunsell Geotechnical Services Ltd	SG100/100 SG100/100
Jul-05	Shenzhen to Tai Po Twin Submarine Gas Pipeline Project	Honwin Engineering Ltd		SG100/100
Sep-05	TP37/03 Remaining Engineering Infrastructure Works for Pak Shek Kok Development Package 2A	Leader - Wai Kee (C&T) Joint Venture	Hyder Consulting Ltd	SG100/100
Nov-05	HY/2002/26 Stone Cutter's Bridge	Hong Kong River Engineering Co Ltd	Ove Arup & Partners HK Ltd	SG100/100
Feb-06	CV/2005/12 Fill Reception Facilities at Tseung Kwan O Area 137 Quarry Bay and Mui Wo	Penta-Ocean Construction Co Ltd	Civil Engineering and Development Department	SG100/100
Mar-06	Maintenance Dredging at Castle Peak Power Station (CPPS) Jetty	New Concepts Engineering Development Ltd	Civil Engineering and Development Department	SG100/100
Mar-06	CV/2004/04 Maintenance and Repairs to Government / Public Piers and Immersed Tubes of Hung Hom Cross- Harbor Tunnel	China Harbour Engineering Co (Group)	Civil Engineering and Development Department	SG100/100
Mar-06	HY/2005/06 Castle Peak Road Improvement West of Tsing Lung Tau	Shun Tat Construction Engineering Limited Chun Wo Construction & Engineering Co Ltd	Mouchel Halcrow JV	SG100/100 SG100/100

May-06	212 Main Works for the Proposed Third Golf Course Development at Kau Sai Chau, Sai Kung	China Harbour Engineering Co (Group)	Ove Arup & Partners HK Ltd	SG100/100
Jun-06	Hong Kong Convention and Exhibition Centre Project - Silt Screening for Intake Pipe	Wai Kee (Zens) Construction & Transportation Co Ltd Kaden - Wai Kee (C&T) Joint Venture	NA	SG100/100 SG100/100
Aug-06	EP/SP/52/06 Development of EcoPark in Tuen Mun Area 38	Kaden Construction Limited	Scott Wilson Ltd	SG100/100
Sep-06	CV/2004/06 Management and Capping of Contaminated Mud Pit IV at East of Sha Chau - Phase III	Kaden - Wai Kee (C&T) Joint Venture	Civil Engineering and Development Department	SG100/100
Oct-06	Lamma Island Cable Landing	United Marine Co Ltd	Hong Kong Electric Co Ltd	SG100/100
Nov-06	CV/2004/01 Maintenance and Repairs to Seawalls, Piers and Other Port Works	Kin Shing Construction Co Ltd	Civil Engineering and Development Department	SG100/100
Dec-06	Private project	Friendly Benefit Engineering Ltd		SG100/100
Feb-07	Prebored Socketted H-Piles at Hong Kong Convention & Exhibition Centre	Yee Hop Engineering Co Ltd	NA	SG100/100
May-07	HY/2005/06 Castle Peak Road Improvement - West of Tsing Lung Tau	Chun Wo Construction & Engineering Co Ltd	Mouchel Halcrow JV	SG100/100
May-07	CV/2004/05 Dredging Maintenance	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG100/100
Aug-07	Dredging Project in Lai Chi Kok Shipyard	Maritime Mechanic Ltd	NA	SG100/100
Aug-07	6/WSD/06 Construction of Salt Water Supply System for Penny's Bay	Univic Engineering Ltd	Water Supplies Department	SG100/100
Nov-07	Permanent Aviation Fuel Facility Hong Kong International Airport (Contract No. H2104)	UDL Dredging Ltd	Babtie Asia Ltd	SG100/100
Dec-07	Seawall Modify, Tuen Mun Area 38	Cheer Engineering Ltd	Scott Wilson Ltd	SG100/100
May-08	DC/2007/10 Design and Construction of HK West Drainage Tunnel	Tapbo Civil Engineering Co Ltd	Ove Arup & Partners HK Ltd	SG100/100
Sep-08	CV/2006/05 Maintenance of Seawalls and Navigation Channels	China Harbour Engineering Co Ltd	Civil Engineering and Development Department	SG100/100



## **G AND E COMPANY LIMITED**

Room B, 13/F Cheung Lee Industrial Building  
9 Cheung Lee Street,  
Chai Wan, Hong Kong  
Tel: 852-2508 0058 Fax: 852-2570 0089  
website: [www.g-and-e.com](http://www.g-and-e.com)

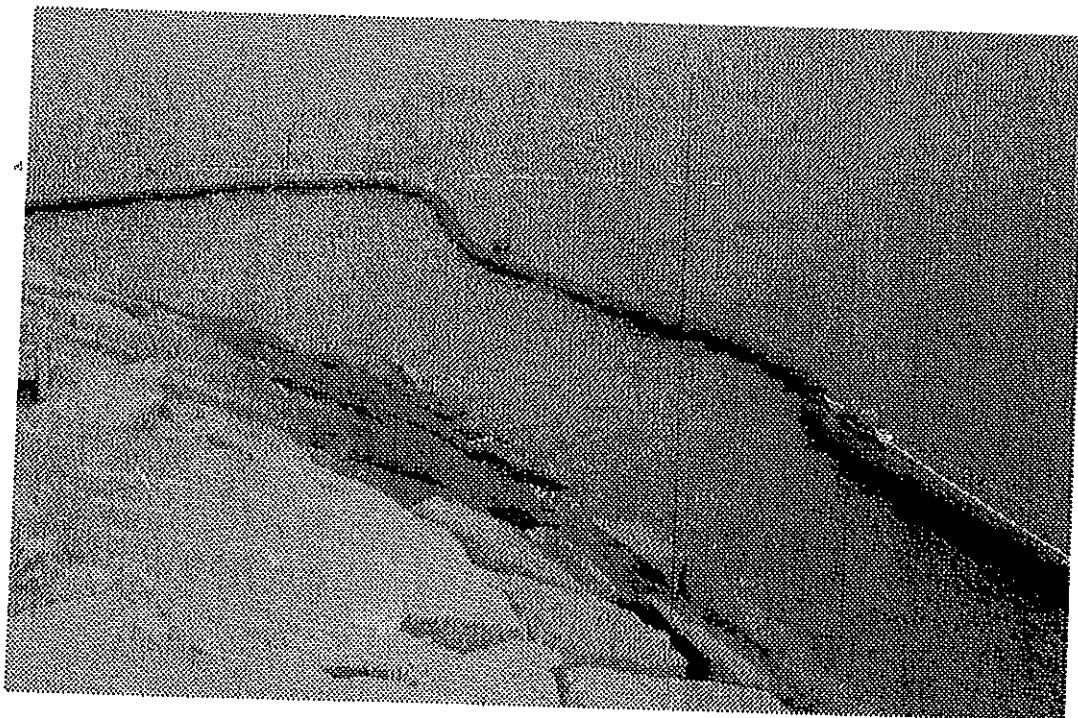


<b>Date</b>	Mar 2010
<b>Project</b>	Contract No. KL/2009/01 Site formation for Kai Tak Cruise Terminal Development
<b>Client</b>	CEDD
<b>Consultant</b>	Scott Wilson Ltd
<b>Main Contractor</b>	Penta-Ocean Construction Co. Ltd
<b>Works</b>	SG100/100 as Silt Curtain
<b>Size</b>	1,050 sq m



## **G AND E COMPANY LIMITED**

Room B, 13/F Cheung Lee Industrial Building  
9 Cheung Lee Street,  
Chai Wan, Hong Kong  
Tel: 852-2508 0058 Fax: 852-2570 0089  
website: [www.g-and-e.com](http://www.g-and-e.com)



<b>Date</b>	March 2010
<b>Project</b>	KL/2009/01 Site formation for Kai Tak Cruise Terminal Development
<b>Client</b>	CEDD
<b>Consultant</b>	Scott Wilson Ltd
<b>Main Contractor</b>	Penta-Ocean Construction Co. Ltd
<b>Materials</b>	SG100/100
<b>Size</b>	1,050 sqm

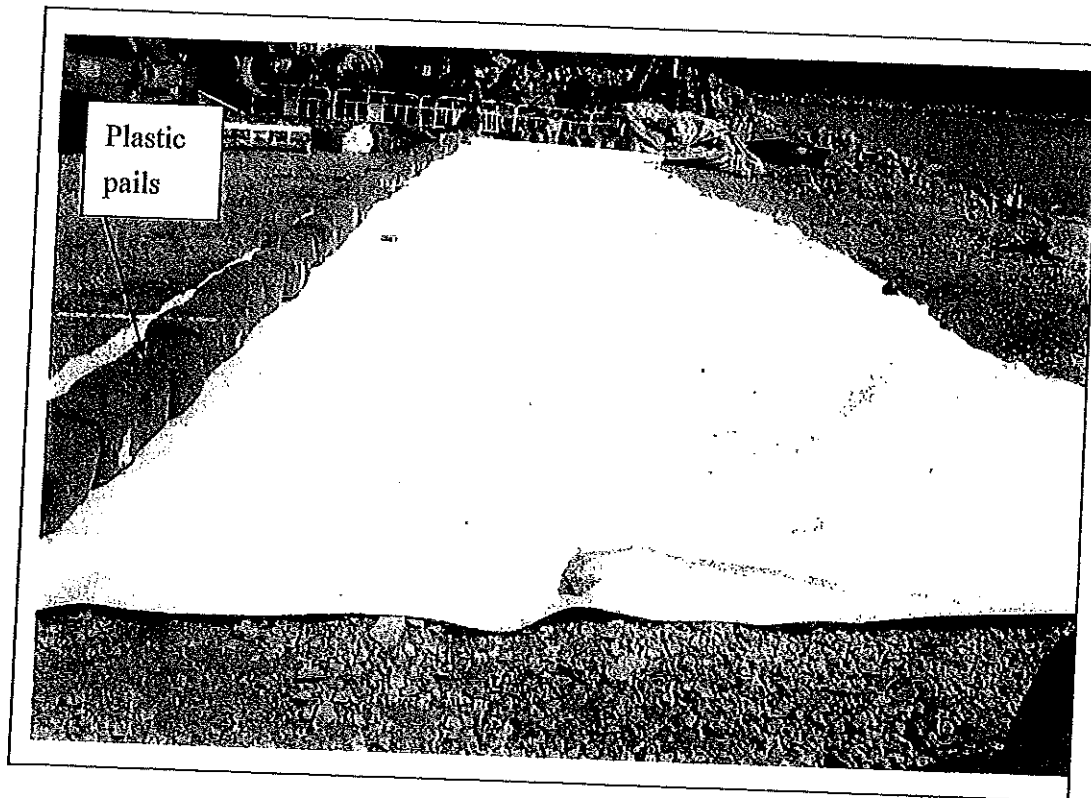
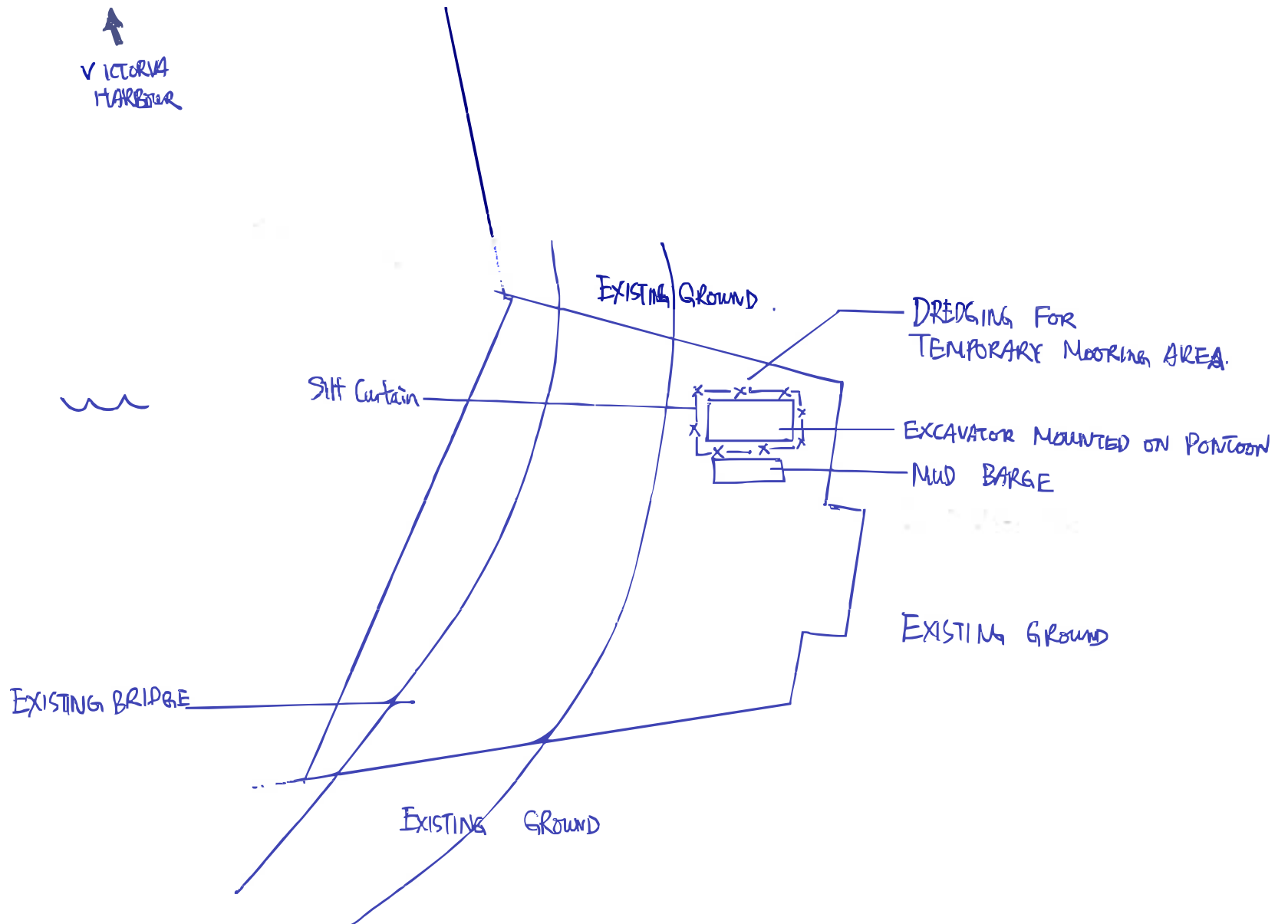


Photo shown Geotextile and Plastic Pails

## **Appendix D – Silt Curtain Deployment during Dredging Operation at Temporary Mooring Area**

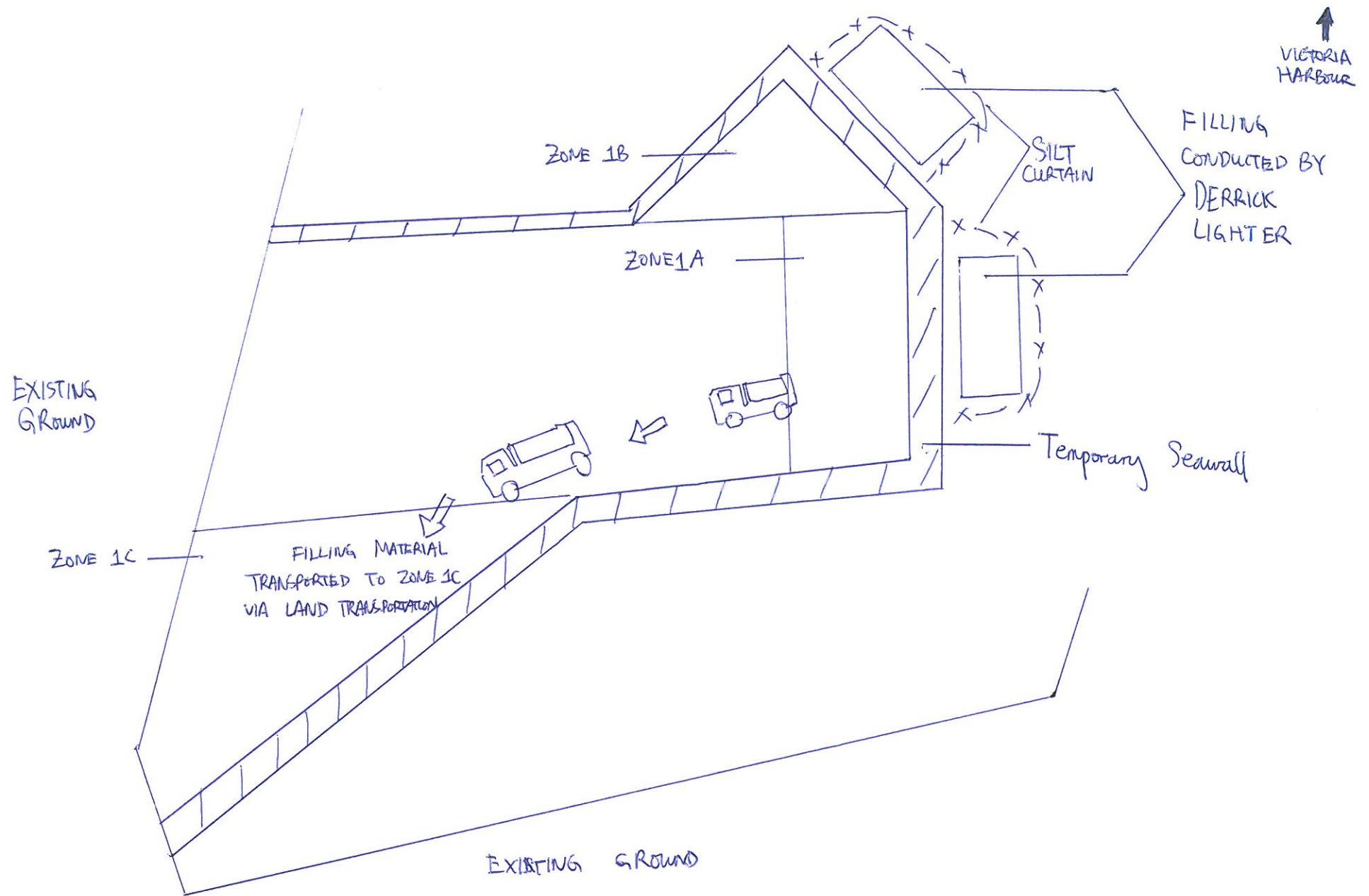


LAYOUT PLAN FOR DREDGING FOR TEMPORARY MOORING AREA

N.T.S.



## **Appendix E – Silt Curtain Deployment during Reclamation Works in Zone 1A, Zone 1B and Zone 1C**



LAYOUT PLAN FOR ZONE 1A, 1B & 1C DURING RECLAMATION WORKS

N.T.S.

## **Appendix F – Daily Checklist Template**

# Silt Curtain每日檢查表

位置：\_\_\_\_\_ 編號：\_\_\_\_\_

日期：\_\_\_\_\_ 檢查員：\_\_\_\_\_

	星期 一	星期 二	星期 三	星期 四	星期 五	星期 六
1. 整潔						
1.1 沒有垃圾在浮架內						
1.2 已清理架內垃圾						
1.3 其它 (請註明):						
2. 浮架狀況						
2.1 浮架沒有損壞						
2.2 浮架接口沒有損壞						
2.3 螺絲及繩索沒有鬆脫						
2.4 其它 (請註明):						
3. 隔泥布狀況						
3.1 隔泥布沒有損壞						
3.2 隔泥布沒有鬆脫						
3.3 其它 (請註明):						
簽署:						

說明: ✓ = 滿意

x = 不滿意須改善

- = 不適用