2 Project Information

2.1 Description of the Project

2.1.1 The existing floating dock, Yiu Lian No. 3 Floating Dock, is located at Yam O Wan, northeast of Lantau and has been in operation since July 1989. In accordance with the Government's rezoning plan for northeast Lantau, Yiu Lian has proposed to relocate the Dock from the existing site at Yam O Wan to the southwest coast of Tsing Yi before the expiry of the existing lease terms in 2008. The new site at Tsing Yi has been approved by the Marine Department. Notification of the intended removal has been submitted to the relevant government departments and Yiu Lian has received no objection.

2.1.2 The existing dock is an individual caisson dock with continuous caisson and side wings, suitable for docking vessels of up to 43,000 metric tons, or up to 43 meters in width and 300 meters in length. The general arrangement of the existing dock is shown in Figure 2-1. Principle dimensions of the Dock are:

Length overall	304.00 m
Length over pontoon	287.00 m
Breadth over pontoon	54.80 m
Breadth of sidewall	3.90 m
Depth of pontoon at centre line	5.00 m
Depth of pontoon at side	4.90 m
Height of top deck at side	18.20 m
Height of safety deck at side	13.90 m
Maximum submerged draught	16.20 m
Floor area	300 m x 54.8m

2.1.3 The proposed new site is located to the southwest of Tsing Yi Island and was used previously by a floating dock named "Apple Dock" for years. The co-ordinates at the four corners of the proposed new site are:

Latitude	Longitude
22°20.110N	114°05.324E
22°20.098N	114°05.353E
22°19.950N	114°05.271E
22°19.979N	114°05.243E

Table 2-1 The Co-ordinates of the Proposed New Site

2.2 The Scope of the Project

2.2.1 The relocation of Yiu Lian floating dock covers two designated projects specified under the Environmental Impact Assessment Ordinance (EIAO). These are the decommissioning of the existing Yiu Lian No. 3 Floating Dock at Yam O Wan and (Item B.6 Under Part 1 of schedule 2 of the EIAO) the commissioning reinstatement of Yiu Lian No. 3 Floating Dock at the southwest coast of Tsing Yi.

Decommissioning of the old Yiu Lian No. 3 Floating Dockyard at Yam O Wan

2.2.2 The decommissioning activities to be involved include the cutting of the chains between the concrete anchor blocks and the Dock and retrieval of the chains. There is on-going discussion between the Marine Department and Yiu Lian on if the anchor blocks should be removed from the existing site. Leaving the anchor blocks in place is preferred as it will avoid the disturbance to the seabed and therefore minimise any potential environmental impact of the decommissioning work. In this EIA, the potential environmental impact of the possible removal of the anchor blocks has been assessed to cover the eventuality.

2.2.3 There are a total of twenty-eight anchor blocks at the existing site and each of them has a dimension of 4.6m (width) x 5m (length) x 3.5m (height). Each anchor block is a concrete block, weighing some 100 tonnes, with a hoisting ring on top and a 50-mm blow pipe with flange inserted from the top face to the bottom. The locations of the anchor blocks are shown in Figure 2-2.

2.2.4 The sediment on top of the anchor block will firstly be removed by a purpose built airlift suction dredger as illustrated in Figure 3-18 and Appendix 3E. After the hoisting ring and the blow pipe connecting flange are exposed, compressed air is introduced to the blow pipe for provision of a thin air layer to the surroundings of the anchor block to break the cohesive and sucking forces exerted by mud on the block surface. In most circumstances, the anchor block is then ready to be lifted up through hoisting.

2.2.5 As illustrated in Appendix 3E, the suction dredger utilises the compressed air to create a vacuum environment underneath the suction head. The seabed material underneath the suction head is then sucked into the suction tube. The dredging rate of the suction dredger varies with the size of the suction tube, the types of the suction head, water depth and air pressure applied to the system. The height of the suction tube is 3 m approximately.

2.2.6 If the anchor block cannot be lifted up owing to incorrect air introduction process or damaging of the hoisting ring, the suction dredger will be further deployed to remove the marine mud on top of and surrounding the block in order to dislodge the anchor blocks. For being conservative, this potential worst-case scenario has been assumed for assessing the potential water quality impact of the recovery operation.

2.2.7 Due to the strong tidal currents and relatively deep water at the existing site, the traditional grab dredging method cannot provide the dredging accuracy required for this operation, potentially leading to unnecessary dredging. However, in cases of large rocks found on the top of the concrete anchor block, the suction dredger cannot remove these rocks and a grab dredger will have to be deployed to remove the rocks. Divers may assist the removal of the anchors. The anchor blocks recovery operation is illustrated in Appendix 3E.

2.2.8 Initially, four to eight concrete anchor blocks will be retrieved from the old Yam O site depending on the site condition. These anchor blocks together with nine new anchor blocks will be installed at seabed of the new site. The Dock will then be towed to the new site and secured with these anchor blocks. After the Dock is anchored at the new site, a further eleven to fifteen of the anchor blocks at the old site will be retrieved and reused at the new site to secure the Dock.

2.2.9 Finally, the remaining anchor blocks (at the old site) will be removed from the seabed. These unused anchor blocks will be reused on other projects in Hong Kong or China. The entire operation will take approximately 14 weeks.

Commissioning of the new Floating Dockyard at the Southwest Coast of Tsing Yi

2.2.10 Small scale dredging work will be undertaken at the new site in the southwest coast of Tsing Yi in order to fix the anchor blocks to the seabed. A grab dredger with a capacity of 6~8 m^3 will be deployed for the dredging work. The dredging volume is estimated to be 9,156 m^3 (approximately 327 m^3 per block). The marine mud dredged to create the first pit will be temporarily stored on a barge. After the anchor block is lowered to the first pit, the marine mud dredged to create the second pit will be used as backfill for the first pit using a grab dredger moving along the barge through a propose built track so that it can dredge at one pit and then dispose the dredged mud to backfill another pit. An alternative method is to store the dredged mud temporarily on barge for backfilling later. The second anchor block will then be lowered to the second pit. This procedure will be repeated for fixing the remaining anchor blocks. Finally, the marine mud from the first pit will be used to backfill the last pit. Due to the consolidation for mud by the weight of the anchor blocks, the amount of surplus sediment is limited. If there is any surplus material from fixing an anchor block, it will be put on top of the anchor block to increase the fixing pressure. Any sediment disposal will not be required. The proposed locations for the anchor blocks are shown in Figure 2-3.

2.2.11 Thirteen to seventeen anchor blocks (four to eight retrieved anchor blocks and nine new anchor blocks) will be first fixed at seabed of the new site. The Dock will then be towed to the new site and secured with these anchor blocks. The remaining anchor blocks will then be retrieved from the old site and reused at the new site to secure the Dock. The whole process will take approximately 14 weeks.

2.3 Dock Operation

Operation Hours and Resources

2.3.1 The operation hours for the Dock are from 8am to 5pm during a normal weekday (Monday to Saturday). The workers will be required to work overtime during nighttime, Sundays, and public holidays if necessary. Over 90% of the workers normally work overtime until 7pm.

2.3.2 The number of workers on the Dock varies, depending on the nature of works. There are approximately 80 workers on the Dock during the normal operation and a maximum of 110 workers during the peak operation.

Access to the Dock

2.3.3 The access to the Dock at Yam O Wan is by passenger crafts. Yiu Lian assigns passenger craft for the transportation of the workers and staff between the pier at the southwest of Tsing Yi and the Dock at Yam O Wan. The passenger craft can accommodate upto 300 people. The journey from the southwest coast of Tsing Yi to Yam O Wan takes about 20 minutes. If the Dock moves to the southwest coast of Tsing Yi, the travelling time will be reduced to about 5 minutes.

Dock Operation

2.3.4 Yiu Lian mainly services international ocean-going liners. The number of ships received for repair and maintenance per year varies, depending on the market.

2.3.5 The main activities undertaken at the Dock are:

- steel renewal for hull structure;
- sand blasting of exterior hull surface;
- painting of exterior hull surface; and
- dry docking survey of vessels including, but not limited to, the keel, stem, stern frame, rudder, propeller, anchor chain and external plating of the side and the bottom, together with bilge keels, thrusters, exposed parts of stern bearing and seal assembly, sea chests, rudder pintles and gudgeons and their securing arrangements.

2.3.6 Painting of exterior hull surface can be further divided into the following activities, depending on the conditions of the hull surface and the specific requirements of the ship owner:

- Paint stripping
  - Pressure washing
  - Manual scraping
  - Grit blasting
  - Disc sanding

- Foul stripping
- Repainting

2.3.7 In view of the activities at the Dock, the potential leakage of antifouling paint, particularly the TBT-containing paints, into the marine environment, is the key environmental concern.

2.3.8 Antifouling paints are used to coat the bottom of ships to prevent the growth of marine organisms such as barnacles, mussels and algae on the hull surface, which would otherwise slow down the ship and increase fuel consumption. Most antifouling paints contain metallic compounds such as copper and zinc, and TBT-containing paints are gradually being phased out.

2.3.9 In Hong Kong, all antifouling paints are considered to be pesticides and are subject to regulatory control under the Pesticides Ordinance (Cap. 133) administered by Agriculture, Fisheries and Conservation Department. Any person who imports, supplies, manufactures, stores or sells pesticides should apply for a permit.

2.3.10 Although Yiu Lian currently has two valid permits for registered pesticides, including TBT-containing paint, the TBT-containing paint has seldom been used in recent years. The reason for this is the ban on of the use of TBT by 2008, required by the International Convention on Control of Harmful Anti-fouling Systems on Ships. Most of the ships have already stopped using the TBT-containing paints and after relocation Yiu Lian plans that, the Dock will only receive ships that do not use TBT-containing paints.

2.3.11 In order to ensure that no ships requiring TBT will be received, the marketing department of Yiu Lian will require the ship owner and operators to provide the painting schedule for checking before a contract is placed. The ship receiving procedure for the future dock operation at Tsing Yi is provided in Appendix 3B.

2.4 Consideration of Alternative Options and Methods for the Project

Consideration of Alternative Options

2.4.1 As the Dock is only allowed to operate at the existing site till 2008, Yiu Lian has to find a suitable site for relocating the Dock to.

2.4.2 The broad location requirements for selecting a suitable site for shipyard activities are:

(i) easy access by sea to the main areas of harbour activities (about 30 minutes by boat);

(ii) relatively easy access to labour sources;

(iii) provision for expansion over existing areas;

(iv) waterfront with appropriate depths in the approaches;

(v) long term land lease provision; and

(vi) site availability within, say the next 10 years.

2.4.3 The Port Development Board of Ship Repair Committee – Shipyard/Ship Repair Industry; Future Requirements PDB(SR) Paper No. 2/91, has identified three areas for long-term provision of shipyard activities with respect to the above requirements. They are:

(i) Green Island New Reclamation

(ii) South of Tsing Yi

(iii) North of Stonecutters

2.4.4 Yiu Lian has reviewed the availability and latest land use of the above recommended sites. It was found that the site at Stonecutters is affected by the development of Container Terminal 8. Therefore, it is not suitable for the relocation.

2.4.5 The water depth around Green Island Reclamation is not sufficient.

2.4.6 The near waters off the south coast of Tsing Yi Island was developed into tanker jetties.

2.4.7 Based on the site selecting criteria, the area at the southwest coast of Tsing Yi is the most suitable location for the new site of the floating dock. Yiu Lian discussed the availability of the land with the Marine Department in January 2003 and was informed that Marine Department had no objection in principle for the proposed new site.

2.5 Construction Programme

The construction works for the relocation of the Dock will take approximately 14 weeks. A tentative work programme is shown in Appendix 2A. Due to safety reasons, the relocation of the Dock will avoid the typhoon season, which is between May and September. Having considered the safety issues, business commitment and the expiry date of the existing lease term, the relocation of the Dock is scheduled to take place during the non-typhoon season between February 2007 and March 2008.

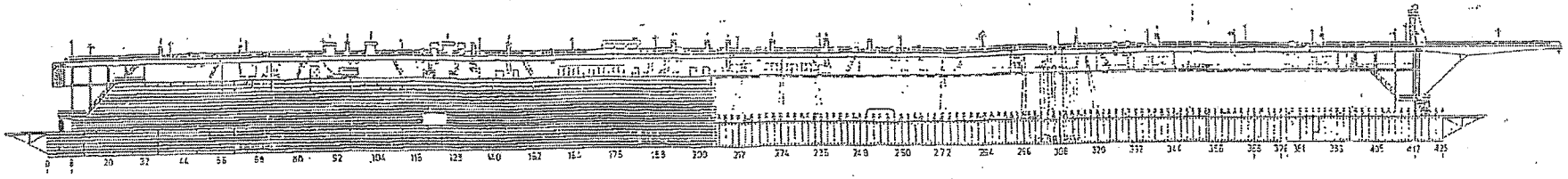
2.6 Interfacing with Other Projects

Construction Stage: No

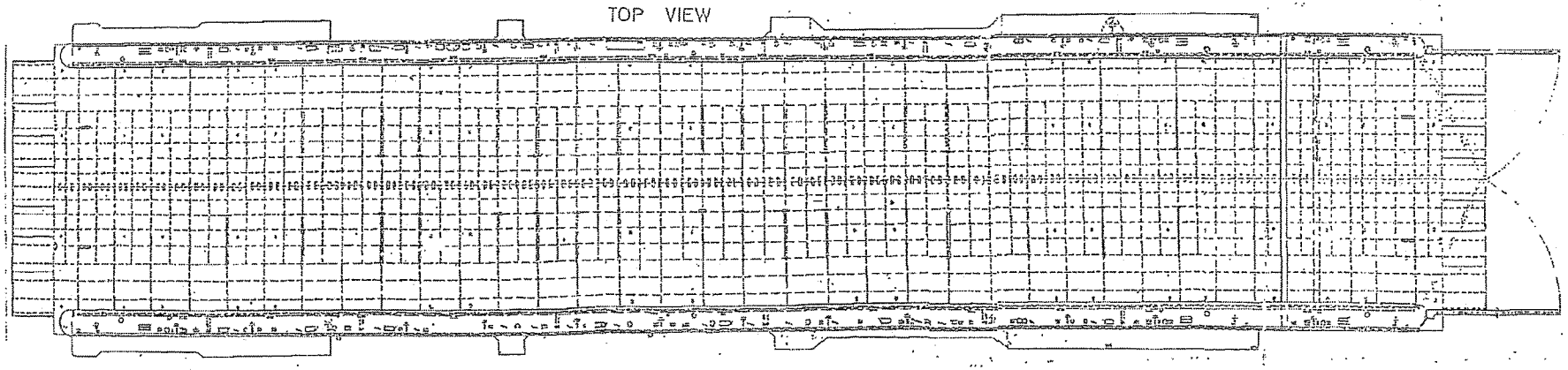
Operation Stage: Yiu Lian Floating Docking No. 1 and United Floating Dock, as shown in Figure 2-3.

Principal dimensions:	
Length over pontoon	304.00 m
Breadth over pontoon	54.80 m
Breadth of sidewall	3.90 m
Depth of pontoon at center line	5.00 m
Depth of pontoon at side	4.90 m
Height of top deck at side	18.20 m
Height of safety deck at side	13.90 m
Maximum submerged draught	16.20 m

LONGITUDINAL SECTION



TOP VIEW



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CONSULTANT

Hyder Consulting

CLIENT

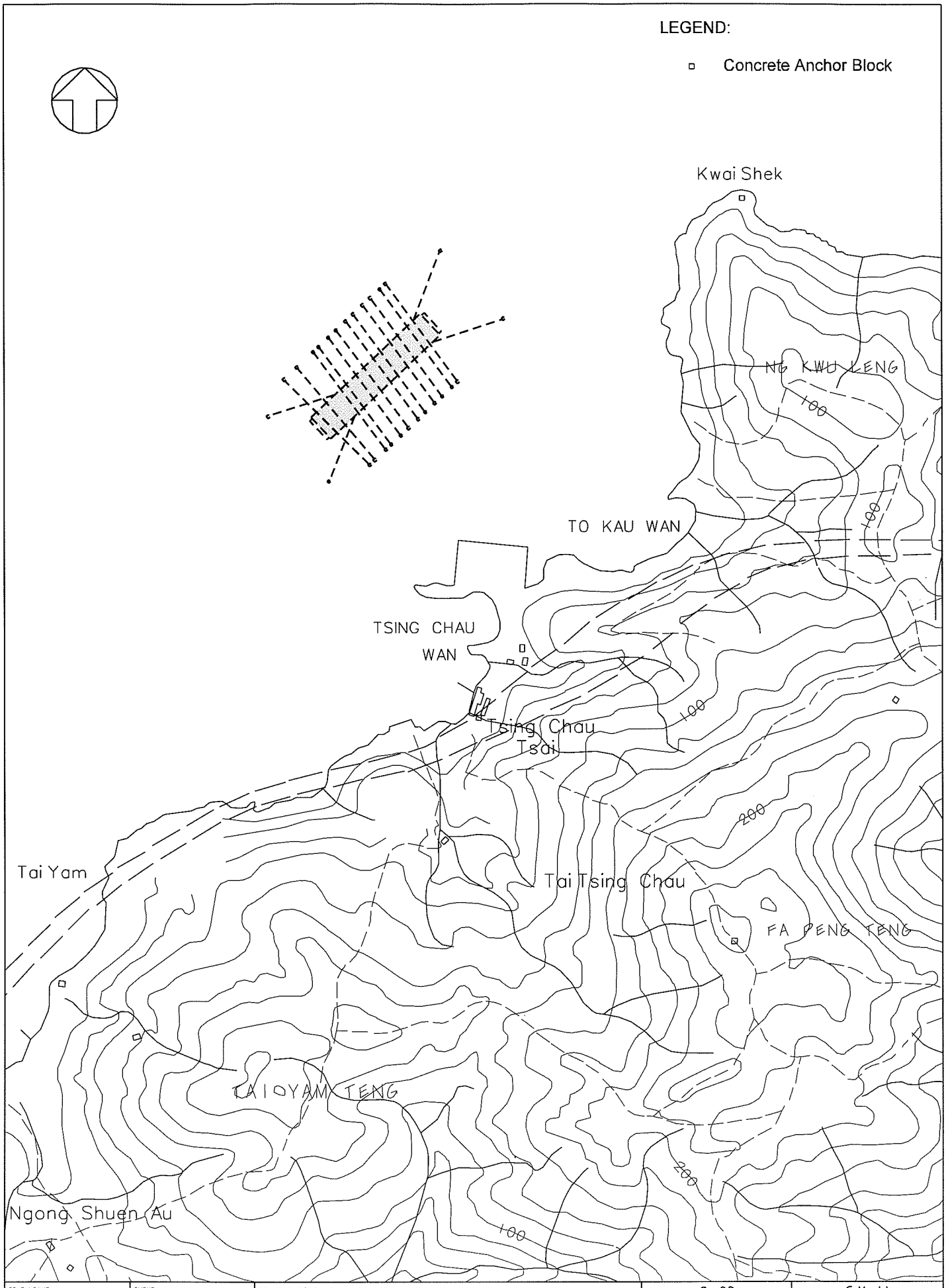
友聯船廠有限公司
Yiu Lian Dockyards Limited

DRAWING TITLE

Relocation of Yiu Lian Floating Dock No. 3

The General Arrangement of the Existing Dock

DESIGNED	S. OR	CHECKED	G.Y. LI
DRAWN	T. KWAN	CHECKED	S. OR
APPROVED	G.Y. LI		
DATE	12-10-2005		
SCALE	-		
DRG. NO.	Figure 2-1	REV.	



CONSULTANT: Hyder Consulting

CLIENT: 友聯船廠有限公司 Yiu Lian Dockyards Limited

DRAWING TITLE

Relocation of Yiu Lian Floating Dock No. 3

The Locations of Existing Dock and Anchor Blocks

DESIGNED	S. OR	CHECKED	G.Y. LI
DRAWN	T. KWAN	CHECKED	S. OR
APPROVED	G.Y. LI		
DATE	12-10-2005		
SCALE	1 : 10000		

DRG NO: Figure 2-2

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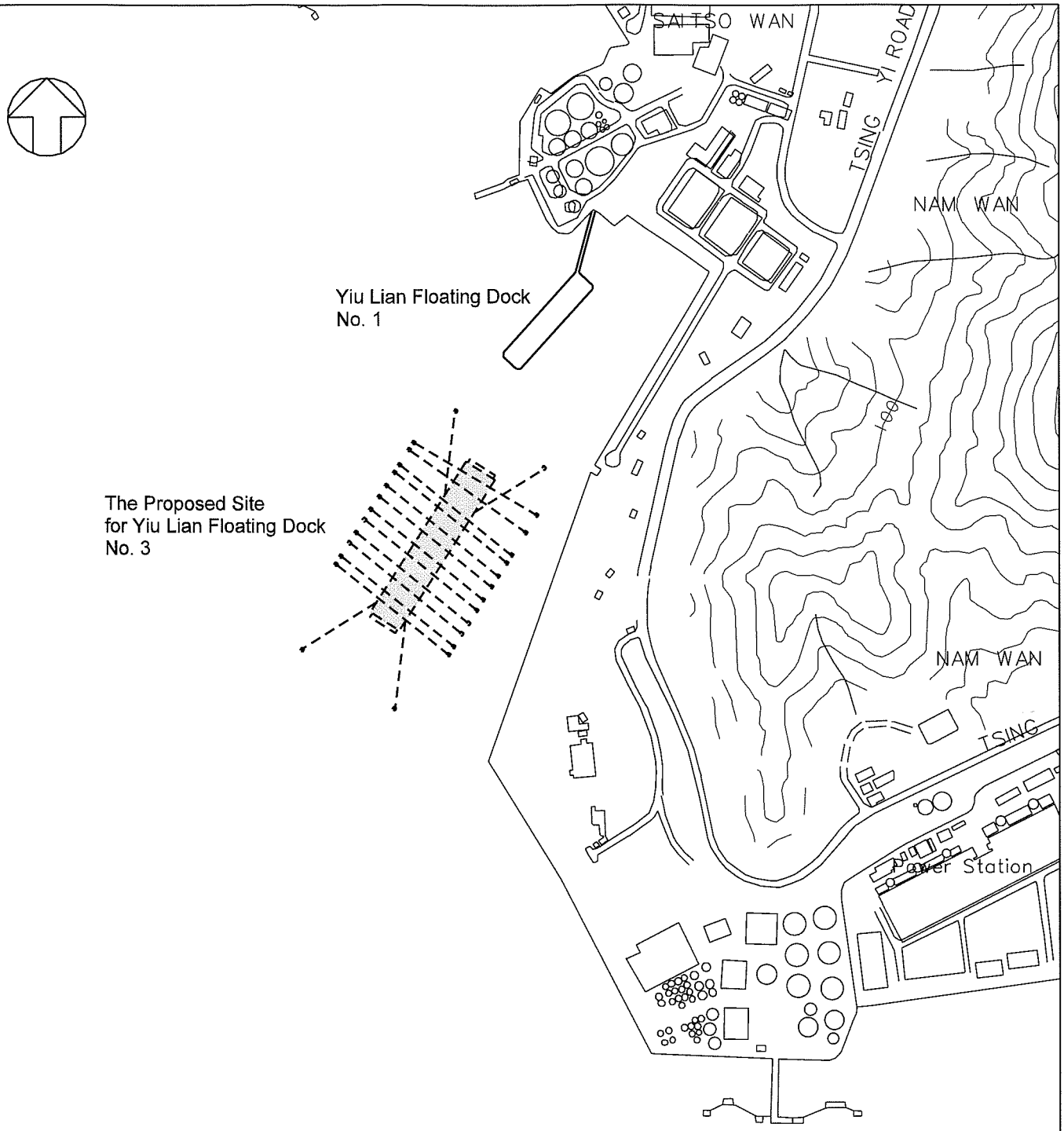

LEGEND:

- ▫ Concrete Anchor Block

CONSULTANT: Hyder Consulting	CLIENT: 友聯船廠有限公司 Yiu Lian Dockyards Limited	DRAWING TITLE: Relocation of Yiu Lian Floating Dock No. 3 The Locations of Proposed Dock Site and Anchor Blocks and nearby Floating Docks	DESIGNED S. OR / CHECKED G.Y. LI DRAWN T. KWAN / CHECKED S. OR APPROVED G.Y. LI DATE 12-10-2005 SCALE 1 : 10000 DRG NO Figure 2-3 / REV -

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