

Civil Engineering Department
The Government of the Hong Kong Special Administrative Region

Agreement No. CE 68/99

Infrastructure for Penny's Bay Development Engineering Design and Construction

**Project Profile -
Asbestos Abatement Work in
Cheoy Lee Shipyard at Penny's Bay**

August 2001

Maunsell Consultants Asia Ltd.
in association with
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Binnie Black & Veatch HK Ltd.

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Engineering Design and Construction

PROJECT PROFILE
ASBESTOS ABATEMENT WORK IN CHEOY LEE SHIPYARD AT PENNY'S BAY

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1. BASIC INFORMATION

1.1 Project Title

1.1.1 Asbestos Abatement Work in Cheoy Lee Shipyard at Penny's Bay.

1.2 Purpose and Nature of the Project

1.2.1 The existing Cheoy Lee Shipyards (CLS) at Penny's Bay, Lantau will be decommissioned for the construction of Hong Kong Disneyland Phase 1 and its associated infrastructures including Penny's Bay Section of the Chok Ko Wan Link Road, Road P2 and the water recreation centre. The environmental impact assessment (EIA) study for the CLS decommissioning is being undertaken and the approval of EIA report as well as the issuance of Environmental Permit (the Decommissioning EP) will be expected in mid-2002. Under the requirement of the Air Pollution Control Ordinance (APCO), an asbestos survey was conducted in April 2001 and the presence of asbestos-containing materials (ACM) revealed. The asbestos investigation report (AIR) and asbestos abatement plan (AAP) have been submitted to and approved on 6 July 2001 by the Environmental Protection Department (EPD). According to the AIR, corrugated cement roofing and switch boxes were the major ACM found in the CLS site requiring removal on an earliest opportunity. The asbestos abatement work, being a significant part of the decommissioning work, however cannot commence until the issuance of the Decommissioning EP. On 9 July 2001, the issue was brought towards to the Advisory Committee on Environment (ACE) for discussion and reviewed and the ACE members expressed no adverse comments.

1.2.2 The purpose of this Project is in response to the AIR recommendation to remove as soon as possible the ACM identified in the CLS site. Early removal will avoid inadvertent disturbance of the ACM by other non-asbestos contractors and visitors during this period before the commencement of CLS decommissioning. In addition, prior ACM removal will also benefit the programme of Theme Park and associated infrastructure projects to allow the earlier commence of the subsequent demolition and decontamination activities. In accordance with the APCO, registered professionals shall be appointed for the asbestos removal work which the registered asbestos contractor to undertake, the registered asbestos supervisor to supervise, the registered asbestos laboratory to air-monitor and the registered asbestos consultant to audit and certify. The scope of the Project comprises :

- (a) Removal of all asbestos-containing materials in Cheoy Lee Shipyards at Penny's Bay;
- (b) Control of asbestos fibre release during the asbestos removal work;
- (c) Monitoring of the air quality during the asbestos removal work to detect any fibre release out of the work area; and
- (d) Proper collection and disposal of the removed asbestos-containing materials.

1.3 Name of Project Proponent

1.3.1 Special Duties (Works) Division, Civil Engineering Department.

1.4 Location and Scale of Project

- 1.4.1 CLS is located on the north and eastern shores of Penny's Bay, Lantau. It has operated since 1964 and ceased operating in 2001. The only neighbourhood adjacent to the southeast of the subject shipyard is an existing CLP gas turbine electricity station. The location of CLS is shown in Figure 1.1.
- 1.4.2 CLS comprises 25 buildings of size ranging from 200m² to 5,000m² that spread over an area of 19 hectares. The boundary of the Project and the distribution of ACM are shown in Figure 1.2 and the usage of each building is described in Section 4.

1.5 Number and Types of Designated Projects to be Covered by the Project Profile

- 1.5.1 The captioned Project is a part of the designated project under Item 17 of Part II of Schedule 2 of the EIA Ordinance, i.e. a facility for ship building or repairing more than 1 ha in size or with a lifting capacity in excess of 20 000 tonnes.

1.6 Name and Telephone Number of Contact Person(s)

2. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

2.1 General

- 2.1.1 The Project is to remove and dispose of ACM at CLS site. The early removal of ACM would avoid inadvertent disturbance of ACM by future site workers, making safe and free of asbestos hazards for the later decommissioning works. It would also have programme gain for the Theme Park and its associated infrastructure projects.

2.2 Responsibilities of Parties

- 2.2.1 CED is the overall Project Proponent, who oversees and manages the Project. The Project Proponent has commissioned registered asbestos consultants to undertake the asbestos survey and supervise the asbestos abatement work. The Project will be implemented by the registered asbestos contractor to be appointed by the Project Proponent at the subsequent stages. Moreover, the registered asbestos laboratory with HOKLAS accreditation will be retained to monitor the air quality (air-borne asbestos fibre count) before, during and after the completion of the asbestos abatement works to ensure the work environment is safe.

2.3 Project Time Table

2.3.1 The asbestos abatement work is scheduled to begin in October 2001 for completion in early 2002 under Infrastructure Contract 1. Figure 2.1 shows the project timetable and its relationship with other concurrent works.

2.4 Interactions with Other Projects

2.4.1 A large-scale international theme park will be constructed together with its related development on reclaimed land in Penny's Bay. Details of likely concurrent projects are as follows:

- Reclamation of about 290 ha. of land at Penny's Bay, construction of about 3.3 km seawall, two ferry piers and construction of about 1.5 km long open drainage channel;
- Phase II site investigation for the CLS land contamination assessment;
- Other works under Contract 1 of Infrastructure for Penny's Bay Development, which include slope formation, screening and landscaping works outside the CLS.

2.4.2 Figure 2.2 shows the interaction of the asbestos abatement work with other projects.

2.4.3 Given that the Project has a short duration, small quantity of material to be handled and mitigation measures in place, the Project is of insignificant contribution to the cumulative impact.

3. POSSIBLE IMPACT ON THE ENVIRONMENT

3.1 General

3.1.1 A checklist summarising the environmental impacts that may arise during asbestos abatement work is attached in Appendix A.

3.2 Air Quality

Dust

3.2.1 The dust impact of the Project will be associated with removal of building roofing, emissions from "light" plants (e.g. diesel generators and air filtering appliances), haul road emissions as well as material handling. Given the minimal usage of such "light" plants and the fact that the Project is small in scale, significant dust impact is not anticipated.

3.2.2 Despite of insignificant dust impact, mitigation measures as follows shall be implemented to fulfil requirements under other non-EIAO regulations, such as the APCO sections regarding asbestos control work and construction dust.

- Regular watering of exposed site surfaces, unpaved roads, and particularly dusty areas;
- All dusty vehicle loads transported to, from and between site locations should be

- covered with tarpaulin sheets;
- Speed controls for on-site vehicles;
- For removing asbestos roofing, temporary hoarding/ tarpaulin sheet of at least 2m high should be erected at periphery of the abatement building; and
- Additional tarpaulin windscreen should be provided immediately around the asbestos roofing under abatement.

Asbestos Fibres

- 3.2.3 Asbestos fibres may be released during removal of ACM, particular those of friable. Under the APCO, the ACM shall be removed in accordance with an approved AAP. The AAP should be prepared by a registered asbestos consultant with reference to the *code of practice (CoP) on the asbestos control* and with EPD's endorsement, in such details for the registered asbestos contractor to follow. Should the registered asbestos contractor strictly follow the precautionary and proper removal procedures given in the approved AAP, release of asbestos fibre from the abatement area is not envisaged. Exhaust of air filtering appliances that are equipped with high efficiency particulate air (HEPA) filters would also be free of dust and asbestos.
- 3.2.4 In line with the AAP, the following mitigation measures should be implemented to control the asbestos fibre release to environment during the asbestos removal work.
- Masking up the abatement work area with double polythene sheets to facilitate the later site cleanup;
 - Segregating the abatement work area with all openings such as windows, doors, grilles, power points, exhaust units, service ducts, etc. in vicinity individually sealed off with 2 layers of polythene sheeting and securely duct-taped in place;
 - Decontaminating and removing the movable objects out of the abatement work area;
 - Decontaminating and masked up with double polythene sheets all non-movable objects, including the floor and wall surfaces;
 - Adequately but not excessively water spraying on the ACM being removed and in the abatement work area to suppress the fibre release;
 - Packaging the ACM as soon as it is taken down;
 - Collecting and removing any asbestos debris as soon as it is generated using hand tools;
 - Using no dust raising tools, such as sweeper for site cleanup;
 - Closely supervising the work by a registered asbestos supervisor and consultant;
 - Monitoring the air quality in terms of asbestos fibres before, during and after the asbestos abatement work to ensure a safe working environment.

3.3 Odour

- 3.3.1 The Project will not involve any earthworks that release soil gases hence no odour impact is anticipated.

3.4 Construction Noise

- 3.4.1 Noise will mainly be generated by diesel generators, air filtering appliances and trucks for

hauling asbestos waste out of the site throughout the project period. However, the project site is remote from sensitive receivers and all planned site activities will not be carried out in the restricted hours (i.e. from 1900 to 0700 everyday and whole day during general holidays including Sundays) under the Noise Control Ordinance. Significant noise impact of the project is not anticipated.

3.5 Night-time Operations

3.5.1 No night-time operations are planned at this stage.

3.6 Traffic Generation

3.6.1 The asbestos waste will be hauled offsite by land and disposed of at the designated landfill. Since the Project period is of short-term, no significant traffic generation will arise.

3.7 Water Quality

Personnel Decontamination Water

3.7.1 In practice, a central 3-chamber airlock decontamination hygiene unit comprising 'dirty', 'shower' and 'clean' rooms will be erected at the entrance of asbestos work zone for worker's decontamination after removal work. Since asbestos fibres are present in the decontamination water, uncontrolled discharge of which will pose a water quality impact.

3.7.2 Under the APCO, the CoP and the approved AAP specify control measures for the decontamination water. The control measures consist of fitting an adequately sized tray to hold the decontamination water in the 'shower' room and equipping a HEPA filtering system to treat the decontamination water before being discharged. Provided that the control measures are effectively implemented, no water quality impact due to the decontamination water is expected.

Contaminated Runoff

3.7.3 If the asbestos roofing is removed, the interior of the building can be exposed to rainfall. Contaminated runoff may be generated from the precipitation in contact with the contaminated equipment, floor slab, soil and debris. The runoff may cause off-building migration of contaminants and this will have surface and groundwater impact. Detailed proposal of the mitigation measure is given in Section 5.

3.8 Solid Waste

General Refuse

3.8.1 General refuse will be generated from the workforce on-site. Given the short duration and scale of the Project, significant impact on the management of general refuse is not envisaged.

Asbestos Waste

3.8.2 The ACM after removed and asbestos contaminated articles, including spent HEPA filters, disposable personal protective equipment (PPE), spent PPE filter cartridges, filter pack for decontamination water and plastic sheeting inside the asbestos removal area will be regarded as asbestos waste. In compliance with the Waste Disposal Ordinance (WDO), all asbestos wastes shall be handled and disposed of following the guidance given in the *Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste* made under the WDO. The code of practice specifies the following requirements:

- Waste Classification
- Waste Collection by Licensed Collectors
- Packaging, Labelling and Handling
- Storage
- Transportation
- Disposal

3.8.3 Where immediate disposal is not possible, such waste arising will be temporarily stored at a designated place with locks in accordance with the *Code of Practice on the Handling, Transportation and Disposal of Asbestos Waste*.

Other Chemical Wastes

3.8.4 Due to the past operation of the shipyard, there are on-site possible chemical wastes other than asbestos, including but not limited to;

- Suspected PCB containing transformer at Plating/ Anodizing House & Laboratory (Building 15),
- BCF sprinkler system in the Dangerous Goods stores (Building 23),
- Foundry wastes containing heavy metals on ground adjacent to Metal Stamping Building (Building 12),
- Foundry sands containing heavy metals at Foundry (Building 17),
- Ash residue from aluminium smelter in rear of Building 18,
- Chemicals powder leftover on the floor of electroplating shop (Building 15),
- Spent lead-acid batteries all around the site, and
- Drummed paints, solvents and lube oil left over,

3.8.5 To avoid disturbance of potential chemical waste during the asbestos abatement work, all movable objects including sand/ grit/ deposits inside the building under abatement shall be cleared in advance. "Movable objects" shall mean all items inside the building other than those belong parts of the building structure or are anchored firmly on the building structure/ existing ground. All movable objects including sand/ grit/ deposits shall be treated as chemical wastes and placed in drums and delivered to a centralised covered area on site. No mixing or off-site disposal of the waste shall be allowed. The non-removable objects shall be covered with the heavy-duty polythene sheets and remained throughout the Project. Transportation and storage of the waste shall be in accordance with the relevant chemical waste regulations. Particularly the requirement of spill prevention measures, worker protection (e.g. PPE) and proper segregation from other wastes shall be observed. Whereas all other chemical wastes outdoors will be left untouched throughout the Project.

3.9 Risk of Accident which would result in Pollution Hazard

3.9.1 The following emergency procedures have been developed in the AAP for the Registered Asbestos Contractor to implement in case of emergency to minimise the risk of accident which would result in pollution hazard:

- Emergency Procedures in the Case of Spillage of Asbestos Debris;
- Emergency Procedures in the Case of Fire;
- Emergency Procedures in the Case of an Accident; and
- Emergency Procedures in the Case of a Black Rainstorm Warning or Typhoon with a Signal of Number Three or Above.

3.10 Disposal of Spoil Material, including Potentially Contaminated Material

3.10.1 Although the Project site is of potentially land-contaminated, the Project involves no soil excavations or earthworks, thus no spoil material is envisaged.

3.11 Disruption of water Movement or Bottom Sediment

3.11.1 As no dredging or reclamation will be required, no impact to hydrodynamics and disruption of bottom sediment is anticipated.

3.12 Unsightly Visual Appearance

3.12.1 No significant visual impact is expected because;

- There is no sensitive receiver in immediate vicinity,
- The Project is of temporary basis, and
- Temporary storage of the asbestos waste shall be inside a designated building on-site.

3.13 Ecological Impact

3.13.1 The proposed asbestos removal work, involving equipment delivery, material storage and movement of personnel shall be confined within the Project boundary. Therefore the Project affects no identified ecological sensitive areas, such as Mong Tung Hang stream and areas with rare/ restricted/ protected plant species that situated outside the Project boundary.

3.14 Cultural Heritage

3.14.1 The Project will involve no soil excavations or earthworks and hence no potential impacts on archaeological remains are expected.

4. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

4.1 Sensitive Receivers

4.1.1 The existing sensitive receivers in the area include the following:

- CLP Gas Turbine Station, and
- Site workers working around the CLS site.

4.2 Pollution Sources

4.2.1 The existing pollution source in the area include the following:

- CLP Gas Turbine Station located 45m to the southeast of CLS,
- Reclamation activities at the Penny's Bay, and
- Formation of access road outside the CLS site.

4.3 Existing and Past Land Uses of the Subject Site

4.3.1 CLS has been in operation since 1964 on reclaimed land leased from the Government. Its shipbuilding business includes a) fibreglass or glass-reinforced plastic boat manufacture, metal (usually steel or aluminium) boat manufacture, and boat repair and maintenance.

4.3.2 The ships and boats fabricated ranged from the smallest launches to ocean-going yachts, passenger ferries, tugs and luxury pleasure craft. The boat repair and maintenance includes general repair of boat hulls and superstructures, re-painting, and the repair, or removal for renovation, of marine engines.

4.3.3 The land use breakdown is as follows:

- 30% for buildings, workshops or offices;
- 15% for storage of fibreglass boat moulds, and
- 55% for general open areas and roads for access, storage, cranes, manoeuvring, slipways and open-air boat fabrication.

4.3.4 The usage of each building as summarised in Table 4.1 as follows:

Table 4.1 Building Usage

No.	Usage
Building 1	Company Store
Building 2	Boat Finishing
Building 3	Boat Finishing and Painting Building
Building 4	Fibreglass Boat Finishing
Building 5	Mold Lofting Room, Paint Booth, and Mold mock-up Building
Building 6	Welding/Metal Workshop
Building 7	Shot Blasting Building
Building 8	Shelter
Building 9	Fire Suppression Pump House
Building 10	Metal Workshop/Hull Finishing Building
Building 11	Metal Boat/Metal Sheet Fabrication Building
Building 12	Metal Stamping Building
Building 13	Sawmill and Molding Shed
Building 14	Leather Dressing, Plating, Anodising and Laboratory Stores, and Vehicle maintenance Shed
Building 15	Plating/ Anodising House and Laboratory
Building 16	Company Store
Building 17	Foundry
Building 18	Fibreglass Hull Construction Workshop
Building 19	Hull Molding and Pressing Workshop, Aluminium Smelter
Building 20	Warehouse
Building 21	Lost Wax Store
Building 22	Machine shop
Building 23	Security Guards Quarters
Building 24	Dangerous Goods Stores
Building 25	Worker's Canteen

5. ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED IN THE DESIGN AND ANY FURTHER ENVIRONMENTAL IMPLICATIONS

5.1 Compliance with the Air Pollution Control Ordinance

5.1.1 The proposed asbestos abatement work shall be conducted in compliance with respective requirements under the Air Pollution Control Ordinance. Key requirements are:

- Appointing a registered asbestos consultant to investigate the subject site of asbestos-containing materials,
- Submitting an asbestos investigation report (AIR) and asbestos abatement plan (AAP) to the Environmental Protection Department for approval,
- Appointing a registered asbestos contractor and supervisor for the asbestos removal work in strict accordance with EPD approved AAP,
- Appointing a registered asbestos laboratory to monitor the air quality during the asbestos removal work,
- Appointing a registered asbestos consultant to overall supervise the conduct of removal work and to certify the completion of work.

5.2 Mitigation Measures

Dust

5.2.1 Mitigation measures as required under the APCO shall be implemented. Section 3.2.2 refers.

Asbestos Fibres

Control measures as required under the APCO and the Factories and Industrial Undertakings Ordinance shall be implemented. Section 3.2.4 refers.

Personnel Decontamination Water

5.2.2 Control measures as required under the APCO shall be implemented. Section 3.7.2 refers.

Contaminated Runoff

5.2.3 There are environmental mitigation measures to minimize the contaminated runoff. The registered asbestos contractor and site engineers shall be briefed of the precautions and responsibility to prevent contaminated run-off and the asbestos abatement work will be avoided during rain events. Technically, temporary roofing will be provided for the building with the asbestos roofing removed. The temporary roofing shall have the following features;

- Temporary solid roofing, such as plastic panels should be provided to withstand against heavy wind or rain;
- The temporary roofing should be in a slant orientation to prevent accumulation of rainwater;
- Joints/ overlaps of the roofing panels should be sealed and duct-taped to ensure water-tightness;
- The roofing panels should be securely tied up to the existing roof frame and regularly maintained of their integrity.

Asbestos Waste

5.2.4 The statutory requirements and control measures stipulated under the WDO shall be complied with. Section 3.8.2 refers.

5.3 Possible Severity, Distribution and Duration of Environmental Effects

Short Term Effect

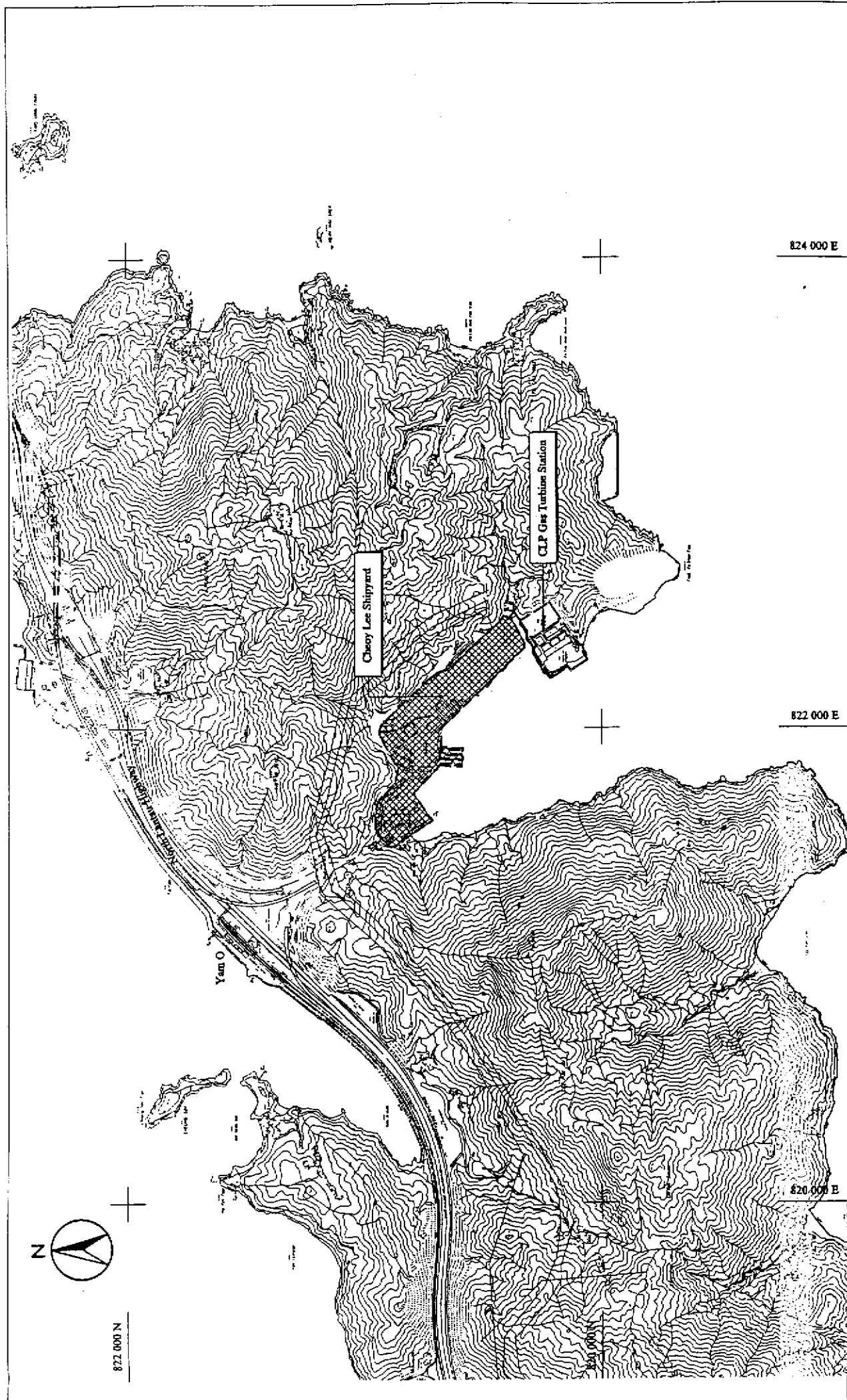
5.3.1 Potential environmental impacts identified in Section 3 will only last for several months from October 2001 to early 2002, tentatively. As such the effects are considered to be temporary and short term. With the incorporation of appropriate mitigation measures described in Section 5, no insurmountable effects are anticipated.

Beneficial Effects

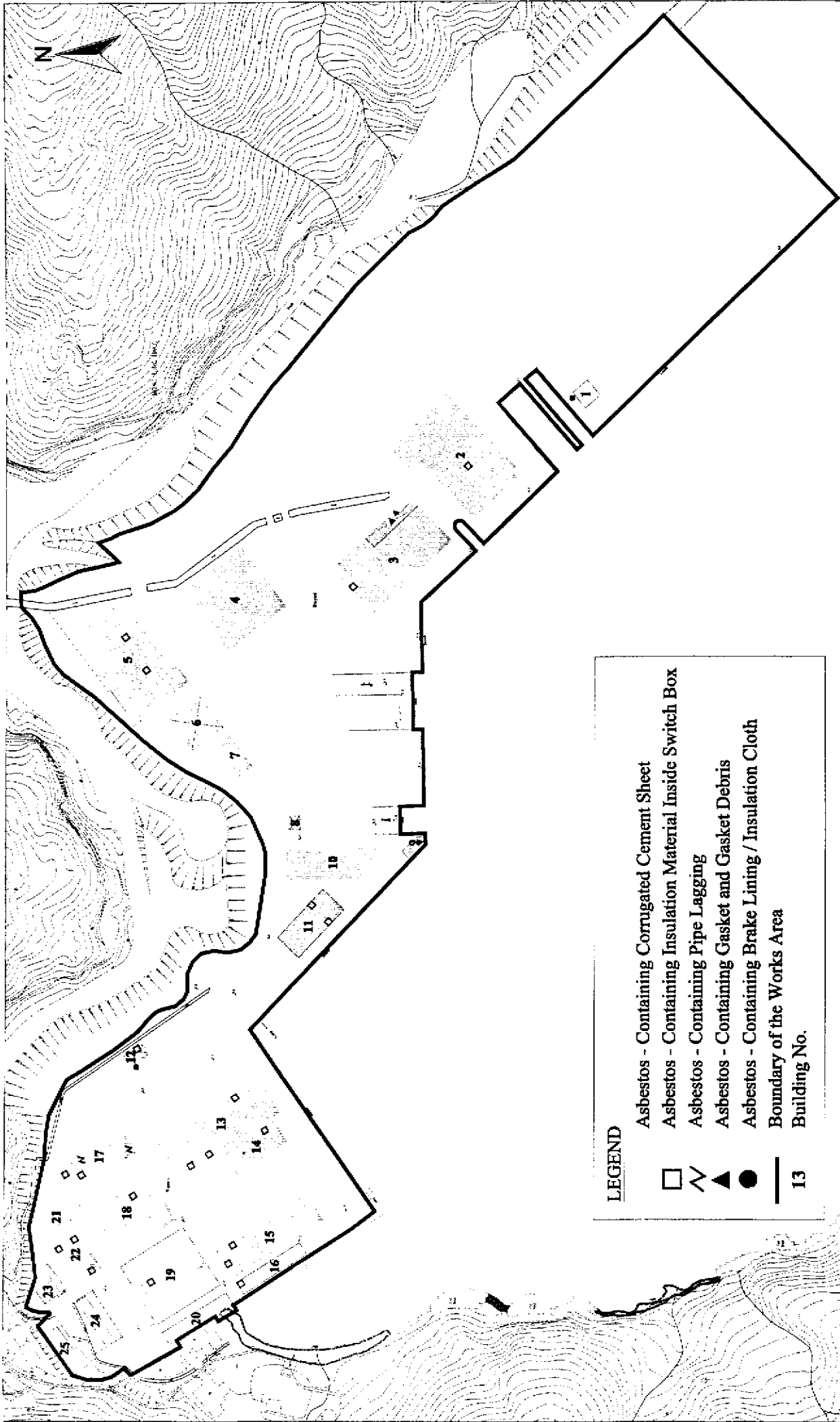
5.3.2 The Project will remove all ACM within CLS which eliminates the potential health hazards to the future site workers.

6. USE OF PREVIOUSLY APPROVED EIA REPORTS

6.1.1 No previous EIA report has been submitted or approved for the Project.



Title



LEGEND

- Asbestos - Containing Corrugated Cement Sheet
- ▨ Asbestos - Containing Insulation Material Inside Switch Box
- ▲ Asbestos - Containing Pipe Lagging
- Asbestos - Containing Gasket and Gasket Debris
- Asbestos - Containing Brake Lining / Insulation Cloth
- 13 Boundary of the Works Area
- 13 Building No.

PENNY'S BAY

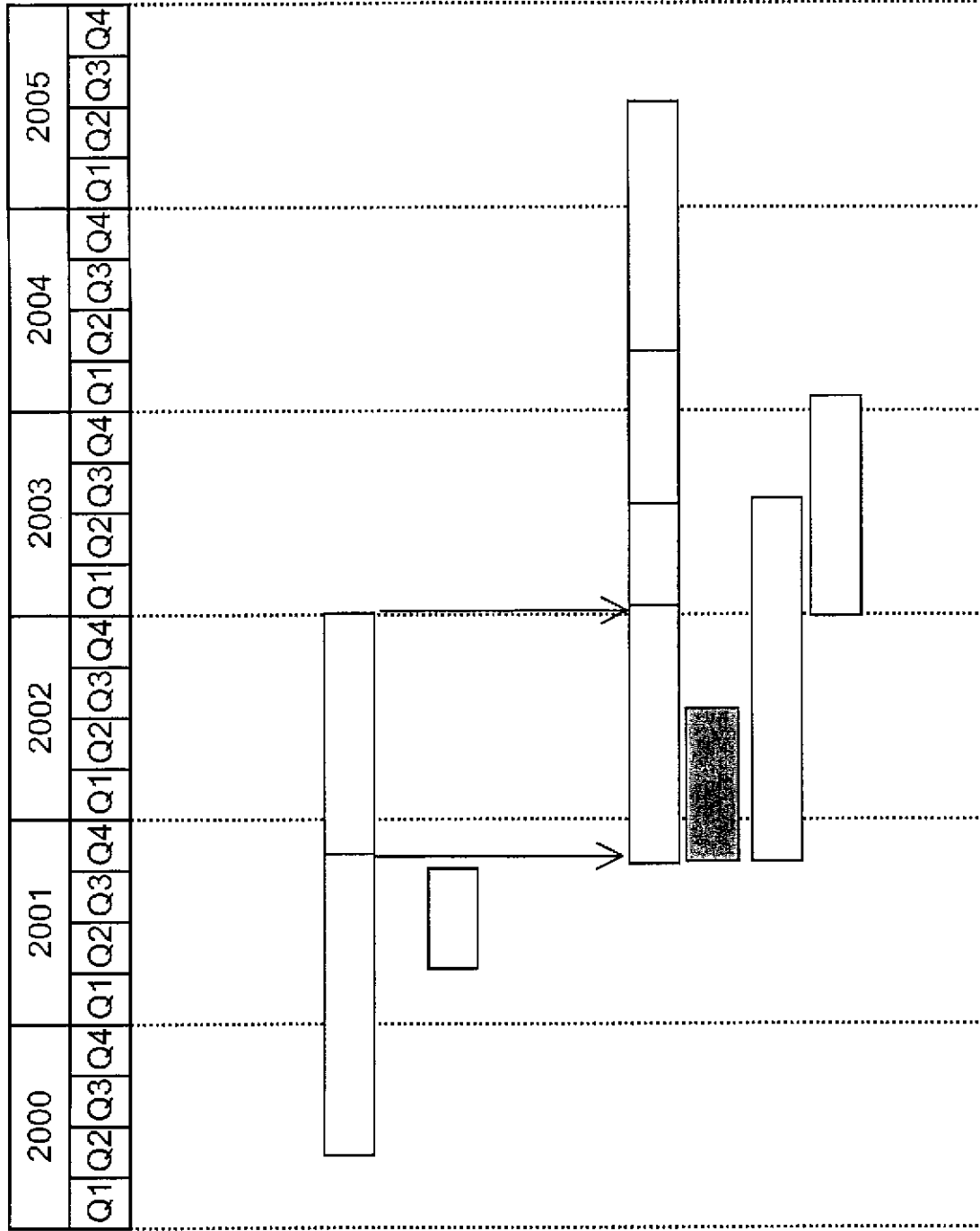
Asbestos Investigation in Cheoy Lee Shipyard, Penny's Bay

Site Layout Plan of Cheoy Lee Shipyard

Title

Scale N.T.S.
Date Aug 2001

Project No. R06100
Figure No. 1.2



Reclamation Works

Phase II SI for CLS

Infrastructure Works

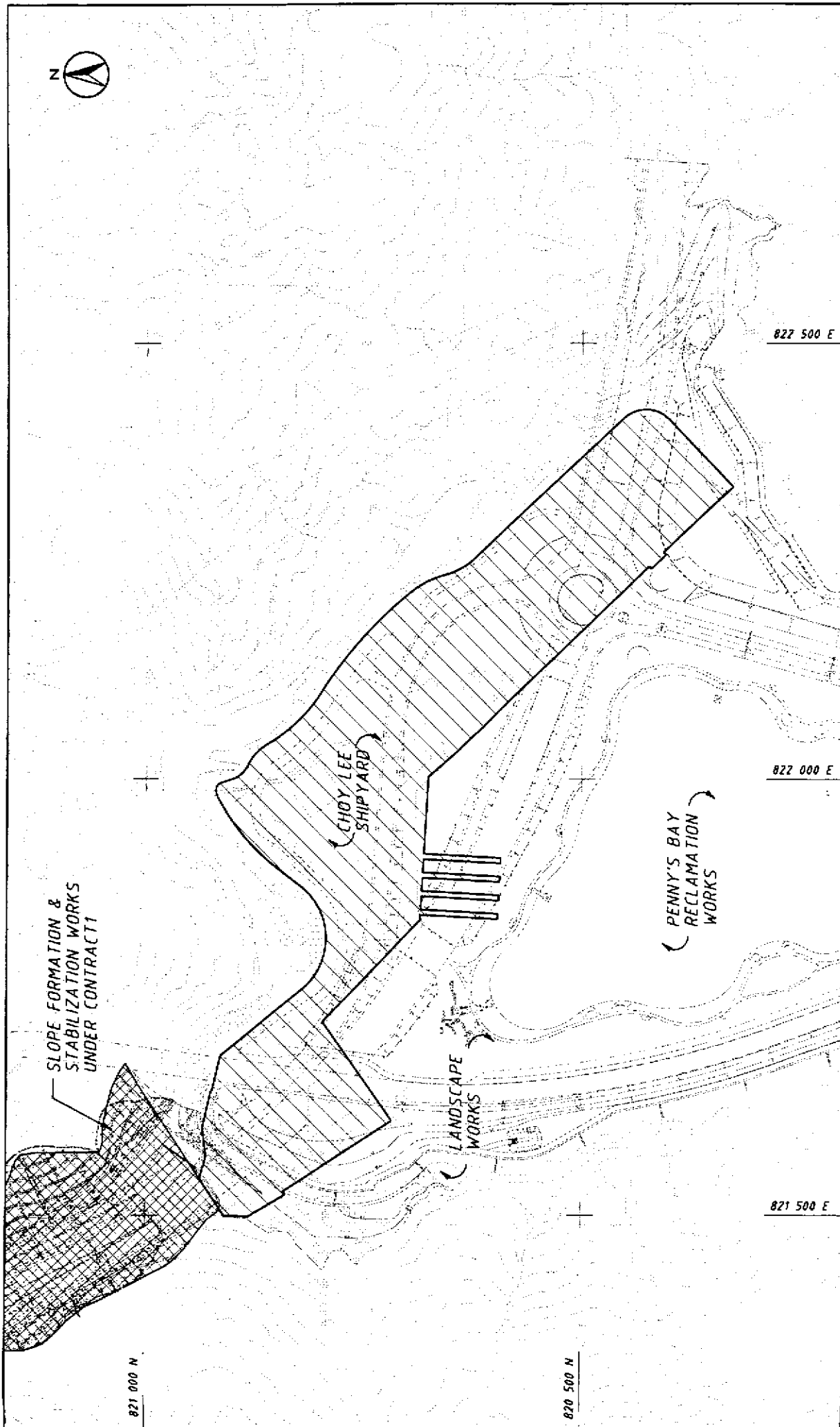
Contract 1

CLS Asbestos Abatement

Slope Works

The Lake

Figure 2.1 Project Programme



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Asbestos Abatement Work in Cheoy Lee Shipyards
at Penny's Bay

INTERACTION WITH OTHER CONCURRENT PROJECTS

Maunsell
 In association with:
 Scott Wilson
 Rinnie Meinhardt

INRBJP\PROJECTS\91800\PRE\345345.DWG

APPENDIX A

CHECKLIST TO OUTLINE POSSIBLE IMPACT ON THE ENVIRONMENT

Possible impact on the environment that may arise during construction and operation of the project will be indicated by ✓ (where impacts are anticipated) or ✗ (where no impacts are expected).

- Dust [✓]
- Asbestos Fibres [✓]
- Odour [✗]
- Noisy operations [✗]
- Night-time operations [✗]
- Traffic generation [✗]
- Liquid effluents, discharges, or contaminated runoff [✗]
- Generation of waste or by-products [✓]
- Manufacture, storage, use, handling, transport, or disposal of dangerous goods, hazardous materials or wastes [✓]
- Risk of accidents which would result in pollution or hazard [✓]
- Disposal of spoil material, including potentially contaminated material [✗]
- Disruption of water movement or bottom sediment [✗]
- Unsightly visual appearance [✗]
- Ecological impacts [✗]
- Cultural Heritage [✗]
-