

RECOVERY PARK IN TUEN MUN AREA 38

PROJECT PROFILE

1. PURPOSE OF PROJECT PROFILE

- 1.1** This project profile sets out the proposed scope of the environmental issues associated with a proposed recovery park (for recovery and recycling of useful materials from the municipal solid waste) at an identified site in Tuen Mun Area 38 for the application of an Environmental Impact Assessment (EIA) study brief. The recovery park is regarded as a designated project under G.4(b) of Part 1., Schedule 2 of the EIA Ordinance.

2. BASIC INFORMATION

2.1 Project Title

Recovery Park in Tuen Mun Area 38

2.2 Purpose and Nature of the Project

Under the land allocation policy set out in the Waste Reduction Framework Plan (1998), the Government have been allocating suitable land through short term tenancy to waste recyclers. Although this arrangement is helping the recycling industry, it does not provide the necessary environment to attract long-term investment and commitment in undertaking waste recycling in Hong Kong. Long term land at affordable price, with the provision of basic infrastructure has been identified to be one of the key areas in promoting the growth of the recycling industry in Hong Kong. The project is to develop a Recovery Park on a piece of 20-ha reclaimed land in Tuen Mun Area 38 for materials recovery and recycling. The Recovery Park will be developed in two phases, with Phase I (10 ha) targeted for occupation in 2004 and Phase II (10 ha) in 2006.

2.3 Name of Project Proponent

Waste Facilities Business Unit (WFBU) of the Environmental Protection Department (EPD)

2.4 Location of Project

The site is located in Tuen Mun Area 38 with an area of approximately 20 hectares, as indicated in Figure 1. To the east of Tuen Mun Area 38 is the River Trade Terminal and to the west are the Shiu Wing Steel Mill, a cement plant and the Tap Shek Kok Power Station. Running at the northern boundary is the Lung Mun Road. Uses of the remaining area (about 41 ha) of Tuen Mun Area 38 are being considered by the concerned bureaux and departments.

2.5 Name and Telephone Number of Contact Person(s)

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3. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

3.1 Scope of Works

3.1.1 The Recovery Park is a Designated Project. The EIA study for the Recovery Park will be carried out by consultants to be employed by WFBU.

3.1.2 A preliminary study to identify and assess the environmental issues associated with the Recovery Park and to develop the framework for the development and management of the Recovery Park is being undertaken by consultants under EPD Agreement No. FM 01-093 commenced on 30 November 2001. Tuen Mun Area 38 is currently zoned "Other Specified Uses - Special Industries Area" and it is proposed to rezone the 20-ha subject area to "Recovery Park".

3.1.3 Development of the Recovery Park will basically comprise the following:

- (i) provision of infrastructure including marine loading/unloading areas, roads, drains, sewers, utilities, etc.;
- (ii) construction of buildings and facilities for accommodating office and recycling operations; and
- (iii) where necessary, provision of on-site wastewater treatment facility or pumping facility for transmitting wastewater to other government facilities for treatment.

3.1.4 Management and operation of the Recovery Park will basically comprise the following activities:

- (i) allocation of sites to waste recyclers for construction of recycling facilities;
- (ii) delivery and unloading of recyclable materials, recycling operations and loading and transportation of finished products by road and sea;
- (iii) maintenance of infrastructure, office buildings, recycling facilities etc.; and
- (iv) environmental monitoring and audit as well as implementation of mitigation measures.

3.2 Project Programme

The project programme is scheduled as follows:

- | | |
|---|-----------------------|
| (i) Commencement/Completion of the preliminary study for development of the Recovery Park | Nov 2001/
May 2002 |
| (ii) Application to Town Planning Board for rezoning | Jul 2002 |
| (iii) Commencement/Completion of Environmental and Transport Impact Assessments | Nov 2002/
May 2003 |
| (iv) Commencement of the design and build (inclusion of "operate" is being reviewed) contract | Nov 2003 |
| (v) Commencement of occupation of the Recovery Park | |
| - Phase I | 2004 |
| - Phase II | 2006 |

4. POSSIBLE IMPACTS ON THE ENVIRONMENT

4.1 From the Preliminary Study being carried out, an initial composition of recovery and recycling operations together with their respective estimated throughputs are proposed for the Recovery Park:

Material	Recovery and Recycling Operations	Phase I	Phase II
Batteries	Lead-acid Battery Processing (e.g. vehicle batteries)	—	?
	Zinc-carbon/Alkaline Battery Processing (e.g. general household batteries)	—	?
	Lithium Battery Processing (e.g. batteries in cameras, phones, etc.)	—	?
	NiCd/NiMH Battery Processing (e.g. batteries in power tools, laptops, camcorders, etc.)	—	?
	Estimated Throughput (tonnes/year)	0	900
Electronics	Cathode Ray Tube (CRT) Recovery	—	?
	Computer/Consumer Electronics Recovery	—	?
	White Goods Dismantling	—	?
	Fluorescent Lamp Recovery	—	?
	Estimated Throughput (tonnes/year)	0	10,000
Glass	Sorting	?	?
	Processing	?	?
	Re-manufacturing	—	?
	Estimated Throughput (tonnes/year)	400	20,800
Organic Food Waste	In-vessel composting	—	?
	Estimated Throughput (tonnes/year)	0	12,700
Ferrous Metals	Sorting	?	?
	Baling	?	?
	Processing	?	?
	Estimated Throughput (tonnes/year)	103,200	52,100

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Material	Recovery and Recycling Operations	Phase I	Phase II
Non-ferrous Metals	Sorting	?	?
	Baling	?	?
	Processing	?	?
	Estimated Throughput (tonnes/year)	23,100	9,700
Paper	Sorting	?	?
	Baling	?	?
	Estimated Throughput (tonnes/year)	136,000	170,700
Plastics	Plastics Recovery for PET, HDPE, LDPE, etc	—	?
	Crushing/Baling	?	?
	Shredding/Cutting	?	?
	Melting/Pellet production	?	?
	Moulding/Extrusion	—	?
	Estimated Throughput (tonnes/year)	1,700	65,100
Textiles	Sorting	—	?
	Baling	—	?
	Estimated Throughput (tonnes/year)	0	4,600
Rubber Tyres	Debeading	?	?
	Shredding	?	?
	Crumbing	?	?
	Extruding/Re-manufacturing	—	?
	Estimated Throughput (tonnes/year)	9,600	1,900
Wood	Dismantling/Sorting	?	?
	Pallet Refurbishment	?	?
	Chipping/Bleaching	—	?
	Plastics Wood Composite Re-manufacturing	—	?
	Estimated Throughput (tonnes/year)	2,000	24,300
Estimated Total Throughput (tonnes/year)		276,000	372,800

Overall Estimated Total: 648,800 tonnes/year

Brief process descriptions for each of the proposed recovery and recycling operations are as follows:

Material	Recovery and Recycling Operations	Brief Process Description
Batteries	Lead-acid Battery Processing (e.g. vehicle batteries)	Mechanical/physical separation of lead, sulphuric acid and battery housing. Lead fragments melted to form lead ingots, acid neutralised by alkali and (plastic) battery housing collected
	Zinc-carbon/Alkaline Battery Processing (e.g. general household batteries)	Shredding/Neutralisation/Drying
	Lithium Battery Processing (e.g. batteries in cameras, phones, etc.)	Mechanical/physical separation and hydrosaline deactivation
	NiCd/NiMH Battery Processing (e.g. batteries in power tools, laptops, camcorders, etc.)	Shredding/Neutralisation/Melting
Electronics / Appliances	CRT Recovery	Crushing allows specific materials to be recovered. The processes used depend on the recycler and type of CRT being recovered
	Computer/Consumer Electronics Recovery	Dismantling /crushing/shredding of equipment to release component parts
	White Goods Dismantling	Dismantling of goods to release component parts.
	Fluorescent Lamp Recovery	"blow out and collect" or "crush and sieve" processes
Glass	Sorting	Manual sorting of incoming glass in terms of pre-defined categories, e.g. size, colour, cleanliness, etc. Process could be automated (based on glass colour)
	Processing	Washing (to remove contaminants) and crushing (to form cullet)

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Material	Recovery and Recycling Operations	Brief Process Description
	Re-manufacturing	Melting cullet in a furnace to form new glass products.
Organic Food Waste	In-vessel composting	Self contained "high-tech" composting solution for organic (food) wastes. Plant designed to avoid environmental impacts by containing odorous, etc. during operation. Resulting compost packaged
Ferrous Metals	Sorting	Manual/mechanical sorting of incoming materials in terms of pre-defined categories, e.g. size, metal-type, cleanliness, etc.
	Baling	Manual/mechanical packaging to pre-determined dimensions for onward transport
	Processing	Likely to require re-melting in a furnace to form ingots
Non-ferrous Metals	Sorting	Manual/mechanical sorting of incoming materials in terms of pre-defined categories, e.g. size, metal-type, cleanliness, etc.
	Baling	Manual/mechanical packaging to pre-determined dimensions for onward transport
	Processing	Likely to require re-smelting in a furnace to form ingots.
Paper	Sorting	Manual/mechanical sorting of incoming materials in terms of pre-defined categories, e.g. size, paper-type, cleanliness, etc.
	Baling	Manual/mechanical packaging to pre-determined dimensions for onward transport
Plastics	Plastics Recovery for PET, HDPE, LDPE, etc	Mechanical sorting equipment to sort plastics on resin coding. Can also include cleaning
	Crushing/Baling	Plastics crushed by mechanical presses and baled at high density for export
	Shredding/Cutting	Plastics shredded/cut by mechanical means to provide homogenous feedstock for local re-manufacturing processes
	Melting/Pellet production	Local re-manufacturing processes involving pyrolysis and other processes to reform thermoplastics into pellets

Material	Recovery and Recycling Operations	Brief Process Description
	Moulding/ Extrusion	Local re-manufacturing processes involving pyrolysis or hydrolysis to remould/extrude plastics
Textiles	Sorting	Manual/mechanical sorting of incoming textiles in terms of pre-defined categories, e.g. size, textile-type, cleanliness, etc.
	Baling	Manual/mechanical packaging to pre-determined dimensions for onward transport
Rubber Tyres	Debeading	Mechanical removal of steel radial belts from within the tyre
	Shredding	Mechanical shredding of rubber tyres by hammer mills or knife mills
	Crumbing	Mechanical/cryogenic shredding
	Extruding/ Re-manufacturin g	A large number of proprietary processes are used to remanufacture rubber products. The process used is highly product-specific and depends entirely on the recycler's business
Wood	Dismantling/ Sorting	Manual dismantling and sorting of incoming materials (including pallets) in terms of pre-defined categories, e.g. size, material, condition, etc.
	Pallet Refurbishment	Manual repair/refurbishment of old or damaged pallets
	Chipping/ Bleaching	Mechanical shredding of wood into wood chips. Optional bleaching of chips for specific afteruses
	Plastics Wood Composite Re-manufacturin g	A large number of proprietary processes are used to mix plastics and wood to produce composite materials. The process used is highly product-specific and depends entirely on the recycler's business

4.2 Construction and operation of the Recovery Park have the potential to cause environmental impacts on its surrounding areas in the following areas:

- ? Air Quality
- ? Noise
- ? Traffic Generation
- ? Water Quality

- ? Waste Management
- ? Visual/Landscape Amenity

4.3 Construction Phase

4.3.1 *Air Quality*

Dust and exhaust emissions will be emitted from construction activities and construction traffic and can vary substantially from day to day depending on the extent of construction activities and the prevailing weather conditions.

4.3.2 *Noise*

During the construction phase of the Recovery Park, potential sources of noise impact will be mainly from the mobile plant used in earthworks, construction of the infrastructure, building works and installation of recycling facilities and equipment.

4.3.3 *Traffic Generation*

Road traffic will be generated by the construction works during the development of the Recovery Park. Marine traffic will also be generated from delivery and unloading of construction materials and equipment. As the site for the Recovery Park has already been formed and no major excavation is expected from the infrastructure and building works, traffic impact, if any, will be small and should not adversely affect the traffic condition of Lung Mun Road nor its approach roads.

4.3.4 *Water Quality*

Surface run-off from the site can be a source of marine water pollution unless it is adequately controlled. Muddy and/or oily water entering the sea will not only have an adverse impact on marine water quality but also create an adverse visual impact. Wastewater will also be generated from site offices, if not managed properly, can also cause pollution to the marine water.

4.3.5 *Waste Management*

No major earthworks will be required as the subject site will have already been formed and available for the development of the Recovery Park. Small amount of excavated materials will be generated from the site preparation and infrastructure works. From construction of foundations for the structures, excavated materials that cannot be reused on site may require disposal. In addition, waste will also be produced from the site offices and general construction activities.

4.3.6 *Visual/Landscape Amenity*

The construction of infrastructure and mainly low-rise buildings for the Recovery Park will have negligible or very low visual impact to the surroundings.

4.4 Operation Phase

4.4.1 *Air Quality*

For transportation of materials in and out the Recovery Park, it is envisaged that vehicles will be travelling on Lung Mun Road and vessels will be using the sea frontage of the Recovery Park. Exhaust gas emissions from the vehicles as well as the vessels are potential sources of air pollution. In addition, exhaust gas emissions and odour from certain recycling operations, if not treated properly, will also give rise to pollution to the surrounding environment.

4.4.2 *Noise*

During the operation phase of the Recovery Park, potential noise impacts will be mainly due to fixed sources, primarily the machinery employed in recycling operations. In addition, vehicles travelling to and from the Recovery Park and loading/unloading activities at the sea front can also cause a noise problem.

4.4.3 *Traffic Generation*

During the operation stage, delivery of recyclable materials and transportation of finished products to and from the Recovery Park will generate considerable vehicular traffic that can cause impact on Lung Mun Road and its associated roads. However, as operation of the Recovery Park will be similar to the existing Industrial Estates in Hong Kong, the road traffic generated by the Recovery Park should be similar to the present situation of the Industrial Estates. The sea frontage of the Recycling Park will also be used for delivery and exporting of materials. As vessels are able to handle materials in bulk, the volume of marine traffic so generated will not be significant.

4.4.4 *Water Quality*

Loading and unloading activities at the sea front may cause pollution to the marine water from accidental dropping of materials into the sea. However, with stringent control on the loading/unloading operations and good site management, the risk of such pollution is considered very low. Wastewater generated from offices of the Recovery Park and recycling operations and contaminated surface run-off are potential sources of pollution to the marine water.

4.4.5 *Waste Management*

During the operation of the Recovery Park, small amount of waste will be generated from sorting, recovery and recycling processes. Office operation as well as visitors to the Recovery Park will also generate a certain amount of refuse requiring disposal.

4.4.6 *Visual/Landscape Amenity*

The structures, buildings and common facilities (e.g. wastewater treatment plant) within the Recovery Park, if not properly designed and maintained, could bring visual impact to the surroundings.

5. HISTORY OF SITE

5.1 About 10 hectares of the land for Phase I of the Recovery Park is a newly reclaimed area. The adjoining 10-ha land (for Phase II) is being reclaimed and will be completed in around 2004.

6. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

6.1 The Recovery Park site is zoned "Other Specified Uses" annotated "Special Industries Area" on the approved Tuen Mun - Outline Zoning Plan (OZP) No. S/TM/14. As indicated in Figure 2 (part-print of the OZP), the site is located west of the River Trade Terminal. To the north of the site, across Lung Mun Road, is a container storage and repair depot and further north is the restored Siu Lang Shui Landfill.

6.2 Existing sensitive receivers in the surrounding environment include the nearby River Trade Terminal and Shiu Wing Steel Mill, and the Tuen Mun residential and recreational areas including the Butterfly Beach located at more than 2 km east from the Recovery Park site. As indicated in Figure 1, there are other facilities being proposed for Tuen Mun Area 38 and the offices of which are also regarded as sensitive receivers.

6.3 The northern part of Phase I of the site for the Recovery Park falls within the 250-metre "Consultation Zone" of the restored Siu Lang Shui Landfill.

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

7.1 Air Quality

7.1.1 *Construction Phase*

The construction works of the Recovery Park will be carried out with good on-site management and working practices and also appropriate dust suppression measures such as frequent water spraying. With the nearest residential areas located at approximately 3 km east of the Recovery Park site, dust nuisance, if any, will not be a cause of concern to the residents. For other sensitive receivers in the surrounding environment include the nearby River Trade Terminal and Shiu Wing Steel Mill, the air quality would not be significantly affected with the implementation of

suitable dust mitigation measures.

7.1.2 ***Operation Phase***

(i) *Dust*

As a general measure to avoiding dust nuisance, all recycling, loading and unloading operations with the potential of generating dust will be restricted to enclosed areas fitted with proper air extraction and filtering systems. In addition, good housekeeping measures will be applied to eliminate potential dust sources within buildings and the Recovery Park.

(ii) *Exhaust gas emission*

The recycling facilities will be designed and operated to minimise any air pollution from exhaust gas emissions. Where appropriate, monitoring and sampling of exhaust gas will be carried out to ensure that emission standards under the Air Pollution Control Ordinance (APCO) are fully met.

(iii) *Odour*

Recycling operations that may cause odour nuisance will be carried out within buildings where deodourising measures will be applied to prevent odour emissions. Where appropriate, patrolling within and outside the Recovery Park will be carried out to monitor the presence of odour, if any, to ensure appropriate actions are taken swiftly.

7.2 **Noise**

7.2.1 ***Construction Phase***

Vehicles, vessels and construction plant will generate noise during the establishment of the Recovery Park. The nearest noise sensitive receivers are the residents in the residential areas some 3 km away from the Recovery Park site. Adverse noise impacts are not anticipated due to the great distance between the site and the sensitive receiver. However, the construction activities will be planned and controlled in accordance with the Noise Control Ordinance (NCO). If construction activities require the use of powered mechanical equipment during the restricted hours, particularly at night, the contractors will be required to obtain a Construction Noise Permit (CNP) and will need to achieve the applicable Acceptable Noise Level (ANL) with the necessary mitigation measures.

7.2.2 ***Operation Phase***

Recycling activities will be carried out in enclosed buildings where the machinery is installed and operated. The loading and unloading activities within the Recovery Park will be along the seafront and remote from the residential areas some 3 km

away and therefore the noise generated will not be significant. Noise that will be created by traffic in and out the Recovery Park and along the traffic routes requires detailed assessment.

7.3 Water Quality

7.3.1 Construction Phase

Proper drainage system will be provided at the Recovery Park during its construction phase to collect surface run-off. The drainage system will incorporate silt traps and oil traps at appropriate locations to remove sand, silt and oil carried by the surface run-off. These traps will be frequently cleaned and maintained. Wheel-washing facility will be provided to wash the wheels of the trucks leaving the site. Muddy water from the wheel-washing facility will be treated prior to discharge. The effluent arising from the site will be treated to the required standard of the Water Pollution Control Ordinance (WPCO) and discharged under a licensing control of the Director of Environmental Protection.

7.3.2 Operation Phase

Wastewater sources from the operation of the Recovery Park basically include washing of delivery trucks, washing and separation of recyclable materials, effluent generated from recycling process, process area hose-down, maintenance cleanup and flushing of toilets which all contain contaminants. The wastewater so generated will be treated by facility-based or common wastewater treatment plant and where possible, treated wastewater will be recycled for use on site. Effluent requiring disposal will also be treated before discharged to the existing sewerage system serving Tuen Mun Area 38. Whether this sewerage system has sufficient capacity or upgrading is needed to accommodate the flow requires detailed assessment.

The operation of the Recovery Park is not envisaged to generate any wastewater discharge likely to cause adverse impact on water quality as all wastewater will be treated to the requirements of the Technical Memorandum under WPCO before discharge.

7.4 Waste Management

7.4.1 Construction Phase

Construction waste and general refuse will be generated from the construction activities on site. Through proper planning and on-site management of the waste, including avoidance and minimisation, waste segregation and storage by category, recovery of recyclable materials and reuse/recycling of construction materials, the quantity of waste requiring disposal will not be significant. Depending on the type of waste to be managed, disposal will be at a designated landfill, a public filling area or the Chemical Waste Treatment Centre. Where applicable, disposal permits will be obtained prior to the collection and disposal.

7.4.2 ***Operation Phase***

During the operation of the Recovery Park, the main sources of waste generation are waste sorted out and remained from recycling processes and refuse generated from general day-to-day office operation. Where waste recycling operations in the Recovery Park are complementary to each other, waste generated from one recycling operation can be used as raw material for recycling by others. Waste that cannot be recycled and requires disposal will be delivered to landfills or appropriate outlet for proper disposal. Recyclable materials in the general refuse will be recovered as far as practicable for recycling within the Recovery Park or exported for recycling.

7.5 **Visual/Landscape Amenity**

7.5.1 ***Construction Phase***

The visual impact due the construction work for the Recovery Park will be minimal. The landscape impact will be insignificant as the site in Tuen Mun Area 38 is newly reclaimed.

7.5.2 ***Operation Phase***

The surrounding environment of the Recovery Park will be taken into account in the architectural design of the buildings and structures. A commonality in the architectural design will be adopted and harmonised colour theme will also be applied throughout the Recovery Park. There will be landscaping in common and rest areas inside and around the Recovery Park. Together with the landscaping around individual facilities and buildings, the overall green setting of the Recovery Park will blend into the natural environment of the area and visual impact, if any, will be minimal.

7.6 **Landfill Gas Protection Measures**

As the northern part of Phase I of the site for the Recovery Park falls within the 250-metre "Consultation Zone" of the restored Siu Lang Shui Landfill, a landfill gas hazard assessment in accordance with the ProPECC Paper No. PN 3/96 and Landfill Gas Hazard Assessment Guidance Note both issued by the Environmental Protection is required.

8. **PUBLIC CONSULTATION**

The Tuen Mun District Council (TMDC) has been informed through a presentation, on 6 November 2001, given by the Environment and Food Bureau and Environmental Protection Department on the development of the Recovery Park. This presentation also included the preliminary study being undertaken for the development and management of the Recovery Park and the detailed study being planned. Further consultation with TMDC will be carried out during the course of the studies.

9. HISTORY OF SIMILAR PROJECTS

There is no similar previous project but similar construction activities and operations have been carried out in the Industrial Estates.

10. USE OF PREVIOUSLY APPROVED EIA REPORTS

Reclamation and Servicing of Tuen Mun Area 38 for Special Industries – Environmental Impact Assessment Study: Main Report, Territory Development Department, December 1994.

*Waste Facilities Business Unit
Environmental Protection Department
April 2002*

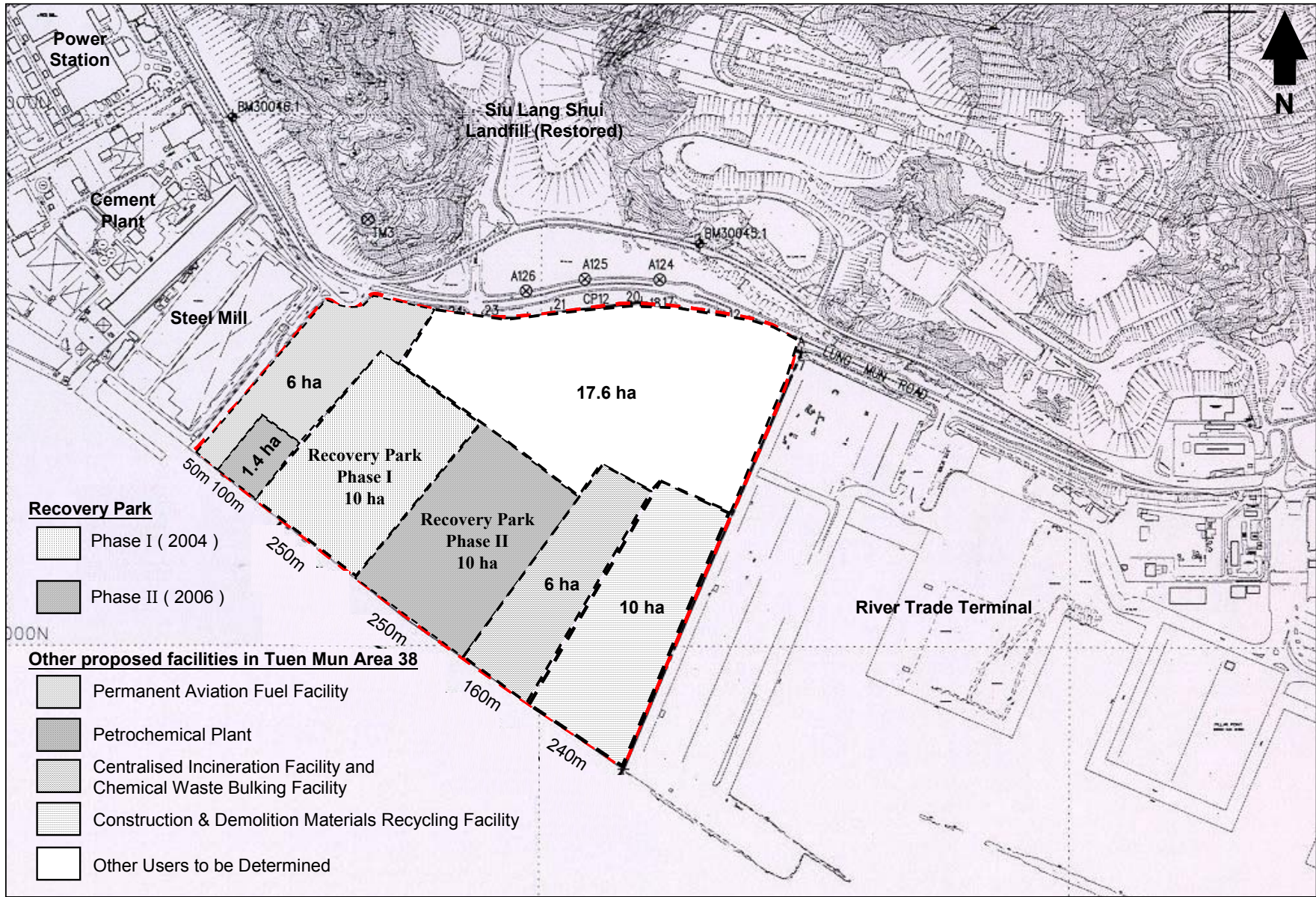


Figure 1	Rev. No.	Recovery Park in Tuen Mun Area 38	Scale 1:10 000
	2		Date: 4 / 2002

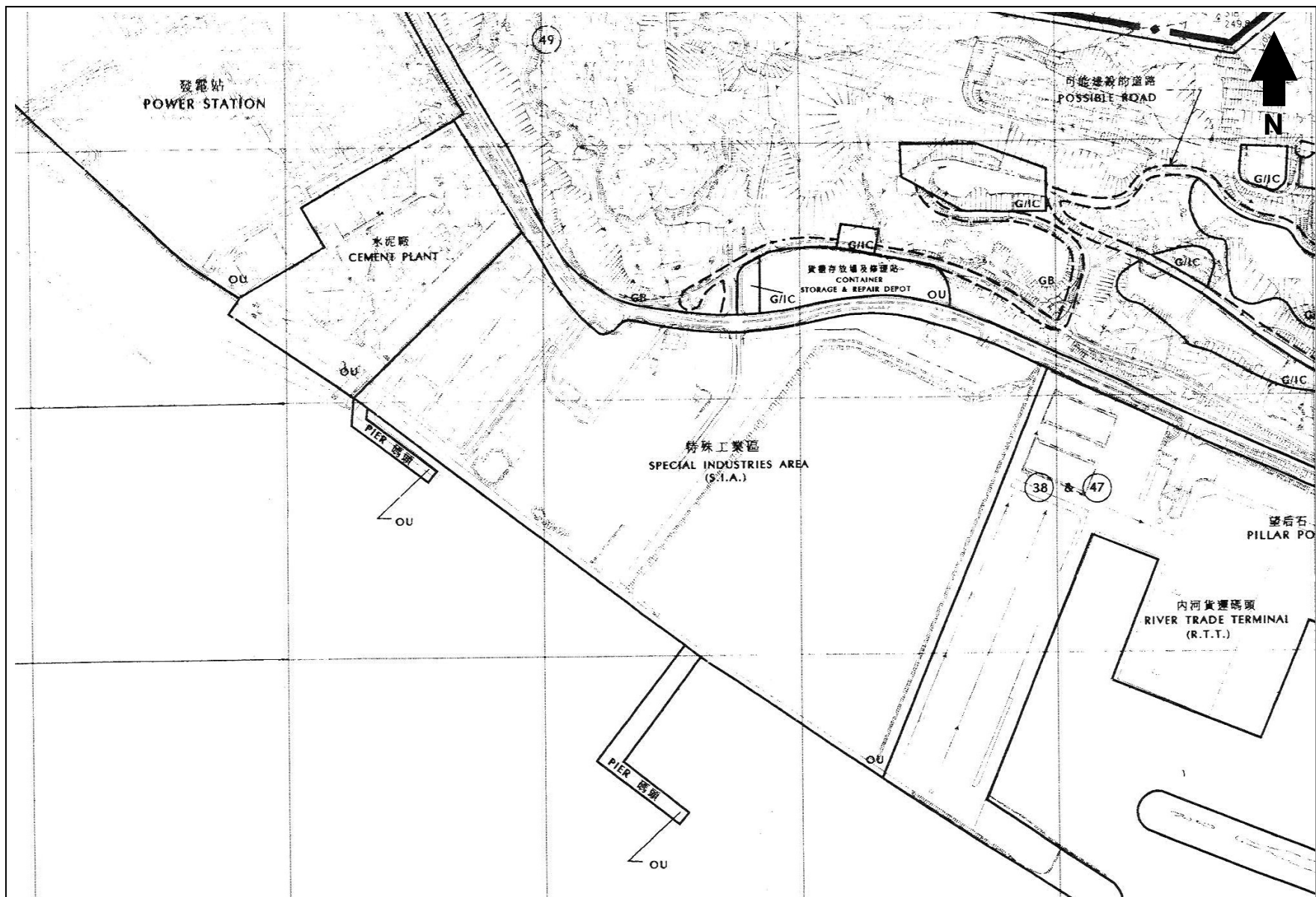


Figure 2

Rev. No.

1

Tuen Mun - Outline Zoning Plan No. S/TM/14 (Part)

Scale 1:10 000

Date: 4 / 2002