Environmental Protection Department

ISLAND WEST TRANSFER STATION

DETAILED ENVIRONMENTAL IMPACT ASSESSMENT

Executive Summary

December 1996

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1 INTRODUCTION

1.1 Island West Transfer Station

The Island West Transfer Station (IWTS) project is an essential component of the Hong Kong Government's solid waste management strategy. Together with the Island East Transfer Station, which was commissioned in 1992, IWTS will handle all the publicly and privately collected waste arisings generated on Hong Kong Island. Wastes brought to IWTS will be containerised and transported by vessel to the West New Territories (WENT) landfill. An artist's impression of IWTS is presented in Figure 1.

The Detailed Environmental Impact Assessment (DEIA) describes the project, its potential impacts, the designed measures to minimise or prevent the impacts and the effectiveness of those mitigation measures.

1.1.1 Description

As illustrated in Figure 2, which shows the location and layout of IWTS, the facility consists of:

- a partially enclosed spiral ramp for access for waste collection vehicles from Victoria Road down to the tipping hall;
- a cavern containing a tipping hall at the upper level and a compactor hall at the lower level;
- access for container vehicles from the compactor hall to an interim berthing facility.

The long-term berthing facility for container vessels transferring waste from IWTS to WENT Landfill will be re-provided to the north-west of the Route 7 alignment.

1.1.2 Construction Phase

Mobilisation and initial site clearance for construction of IWTS started in May 1995. The facility is due to be fully constructed, commissioned and be ready for operations in April 1997.

1.1.3 Operation Phase

The facility is due to commence operations in May 1997 and the first operation and maintenance contract will be for a period of 15 years, ie. the year 2012.

1.2 WENT Landfill Reception

At the designated waste reception area at WENT Landfill, containerised waste arriving by sea from IWTS will be trans-shipped onto landfill 'slave' vehicles for final disposal.

2 CONSTRUCTION IMPACT ASSESSMENT

2.1 Construction Impacts - General

Construction of IWTS will include the following construction activities:

- construction of the spiral ramp and ancillary buildings, eg. weighbridge complex, offices and vehicle maintenance workshop;
- construction of a reinforced earth wall and raised platform to support vehicle reception and weighbridge facilities;
- excavation of the cavern, using blasting techniques, and removal of approximately 42,000 m^3 of rock spoil;
- installation and commissioning of plant inside the cavern, eg. compactor units, ventilation systems, vehicle washing facilities and wastewater treatment plant.

The construction phase of IWTS will generate environmental impacts.

2.1.1 Noise Impact

The main construction-related impacts are expected to be noise and vibrations related to excavation, blasting, haul road traffic and access ramp construction.

Construction of the IWTS facility will be undertaken in such a way as to minimise the impacts of noise from powered mechanical equipment, blasting and construction-related traffic on nearby sensitive receivers.

The pattern and timing of blasting will be strictly controlled and monitored to ensure that vibration from blasting does not cause nuisance or damage.

Regular monitoring of noise levels and implementation of appropriate mitigation measures will ensure that noise levels are kept within the required limits at all times during construction of the transfer station.

2.1.2 Air Quality Impact

Construction activities at the IWTS facility will follow good site practice. Air quality both within and outside the excavated cavern will be monitored, and appropriate mitigation measures for cavern ventilation and dust suppression will maintain air quality levels within acceptable limits.

2.1.3 Water Quality Impact

Site runoff will be controlled through implementation of erosion control measures and installation of effective silt traps to ensure water discharge to the stormwater drainage system complies with statutory requirements.

Marine water quality impacts will be minimal because no dredging will be required for marine access to the berthing area.

Construction activities will be undertaken in a manner which minimises adverse impacts on water quality. Regular monitoring and implementation of mitigation measures will ensure that performance limits for water quality will not be exceeded.

2.1.4 Traffic Impact

During construction, there will be minimal impact on the local road network since all spoil will be disposed of by barge directly from the site. Construction-related road traffic from the IWTS facility will have a negligible impact on sensitive receivers in the study area.

2.2 Construction Impacts - Summary

With the implementation of the pollution control measures proposed in the DEIA, environmental impacts in terms of dust, noise, water quality, road and marine traffic will be kept within statutory and acceptable limits.

2.3 Operational Impacts - General

The transfer station will provide facilities for the reception and transfer of publicly and privately collected waste from areas of Hong Kong Island. IWTS is designed to process a maximum throughput of 1,200 tonnes per day. Waste received by road at IWTS will be compacted into containers and transferred by sea to WENT Landfill at Nim Wan.

Waste deliveries will be accepted at IWTS from 07:30-23:30 hours, with routine maintenance carried on during these hours. The operational hours at WENT are from 08:00-23:00 hours.

All refuse handling operations will take place underground within the tipping hall and compactor hall. Within the tipping hall, waste collection vehicles (WCVs) will discharge waste into live-floor hoppers from which the refuse is passed into compactors for compaction into containers.

Entrance to the site for WCVs will be via an acoustically shielded spiral ramp from Victoria Road, the weighbridge complex and the tipping hall access. After deposition of refuse, vehicles will exit the site via the vehicle washing facilities (located inside the cavern), the access tunnel and the weighbridge.

Tractor-trailer units will shuttle back and forth, via the compactor hall access, between the compactor hall and the berthing facilities. Empty containers will be unloaded from the marine vessel directly onto the trailers. Full containers will be offloaded from the trailers directly onto the marine vessels for transferring to WENT by sea or, under emergency conditions such as typhoons, will be transported from the site via Sai Ning Street and Victoria Road to WENT by road.

During the peak 30 minutes of operation, there may be 20 WCVs entering/leaving the transfer station and six tractor-trailer units present in the compactor hall at any one time.

There will be one shipping movement to and one shipping movement from the wharf each day.

2.3.1 Noise Impact

Operational noise sources at IWTS include vehicle movements, container handling, the ventilation shaft and monthly 30 minute test-runs of the emergency generator. The operational noise impact assessment predicts that noise levels from operational activities at IWTS during the peak year (2012) will generally be within the statutory limits and Performance Requirements of the Contract. The main operational impact is expected to be vehicle noise from WCVs serving the site. This will be ameliorated by partially enclosing the spiral access ramp with an acoustic barrier.

Operational phase noise monitoring will be undertaken to ensure that noise levels are kept within the required limits.

The noise impact from increased traffic flows on Victoria Road is less than 1 dB(A), which is insignificant.

Noise impact studies for WENT Landfill show that between the hours of 08:00-23:00 hours, noise levels from simultaneous operation of all container berthing facilities will be well within the specified criteria.

2.3.2 Air Quality Impact

The design and operational measures to be used at IWTS to achieve the required air quality are as follows:

- the transfer station cavern will be extract ventilated, with all extracted air from potentially dusty or odorous areas passing through dust and odour control scrubbing systems prior to being vented to the atmosphere;
- the tipping hall will be totally enclosed;
- all surfaces and drainage arrangements will be designed with easy-to-clean surfaces and without difficult-to-clean corners, crevices and enclosed areas;
- all roads, accessways, floor and vehicle manoeuvring areas will be regularly washed and swept with equipment suitable for the duty;
- waste will be stored only in closed containers;
- provision will be made for washing container exteriors every trip;
- vehicle and wheel washing facilities will be provided.

The design of IWTS ventilation system and associated air treatment systems will result in air quality, both within and outside the cavern, that conforms with the strict environmental performance criteria required by EPD. In addition, regular monitoring of air quality parameters within the cavern and at the site boundary will be undertaken to ensure that these standards are maintained.

Dust and vehicle emissions arising from the operation of the WENT Landfill Reception Area will have minimal impact.

2.3.3 Water Quality Impact

All sources of contaminated and potentially contaminated effluent generated at IWTS will be effectively separated from runoff. The effluents will be adequately treated on site to conform at all times to the appropriate standards outlined in the *Technical Memorandum on Standards for Effluents Discharged into Drainage and Sewerage Systems, Inland and Coastal Waters*, prior to discharge to the foul sewerage system.

Regular monitoring of treated effluent from the wastewater treatment plant, and stormwater drainage from site runoff, will ensure that all discharges are maintained within the specified performance limits.

2.3.4 Traffic Impact

Environmental impacts from the transportation of containerised waste from IWTS to WENT Landfill will be minimal. Marine transportation of the containerised waste between IWTS and WENT will involve only one sailing per day. Road transportation of containerised waste will be used only under emergency conditions and will have little impact on traffic congestion.

2.3.5 Landscape and Visual Impact

Visual impacts of the facility will be minimal due to construction of the facility within a cavern, and the compactness of the site. Mitigation measures including planting, reinstatement of slope profiles, and sensitive architectural treatment of buildings will significantly reduce any visual impacts.

2.3.6 Public Relations

Swire BFI will ensure that construction and operation of IWTS is undertaken in such a way as to minimise nuisance as much as possible. Individual queries from the public will be answered by Swire BFI's contact personnel, who will be contactable on a 24 hour basis.

2.4 Operational Impacts - Summary

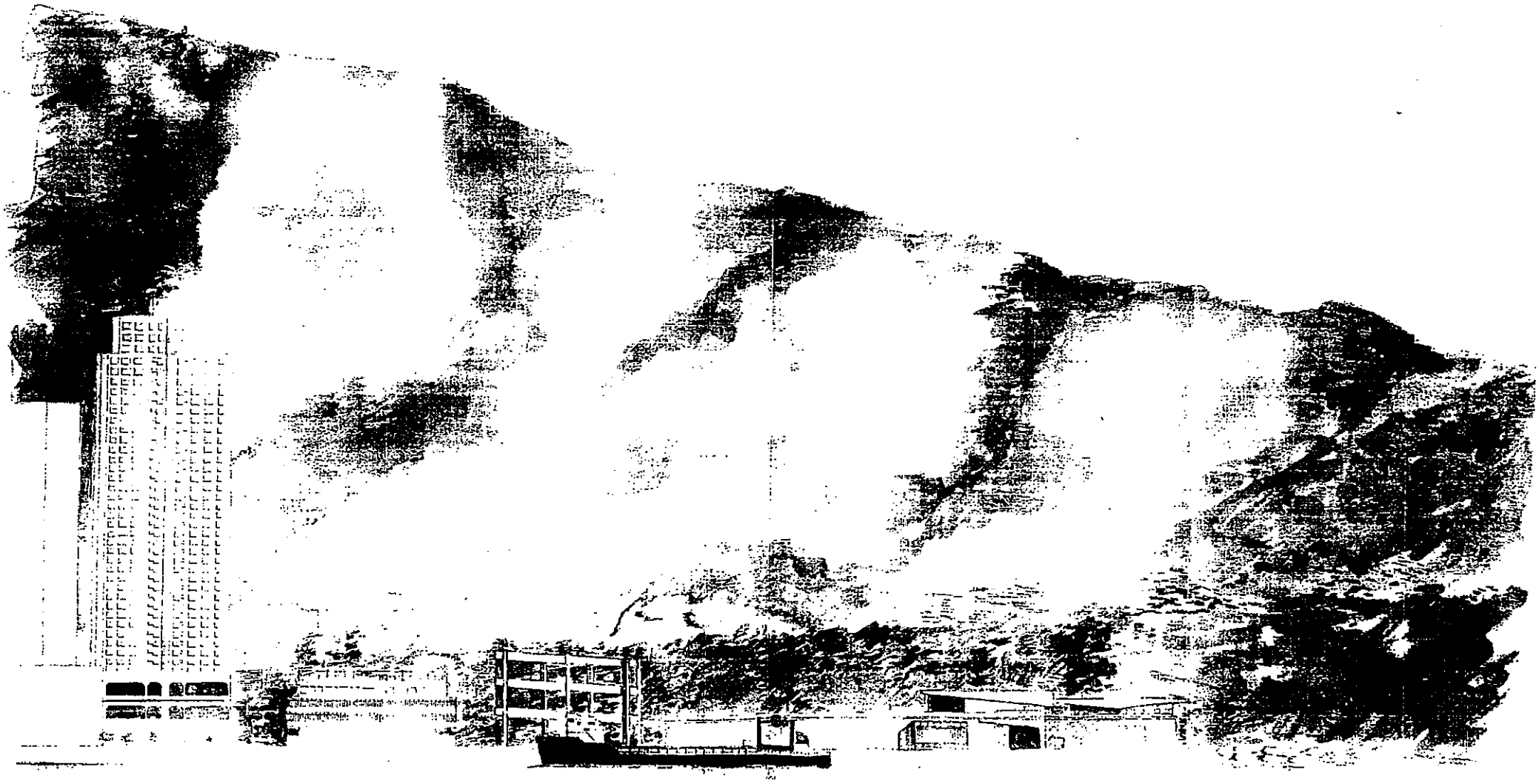
The main operational impact is expected to be vehicle noise from WCVs serving the site. This will be ameliorated by partially enclosing the spiral access ramp with an acoustic barrier.

Environmental impacts of noise, dust, odour and effluent emissions from the IWTS facility itself will be minimal, due to the construction of the facility within a cavern and the innovative design of the ventilation/scrubbing and wastewater control systems.

With the implementation of the appropriate pollution control measures, environmental impacts in terms of noise, air quality, water quality, road and marine traffic will be kept within statutory or acceptable limits.

3 CONCLUSION

The Island West Transfer Station has been planned and designed to be constructed and operated in a way which minimises the impacts on the noise, air and water quality of the surrounding environment and sensitive receivers.

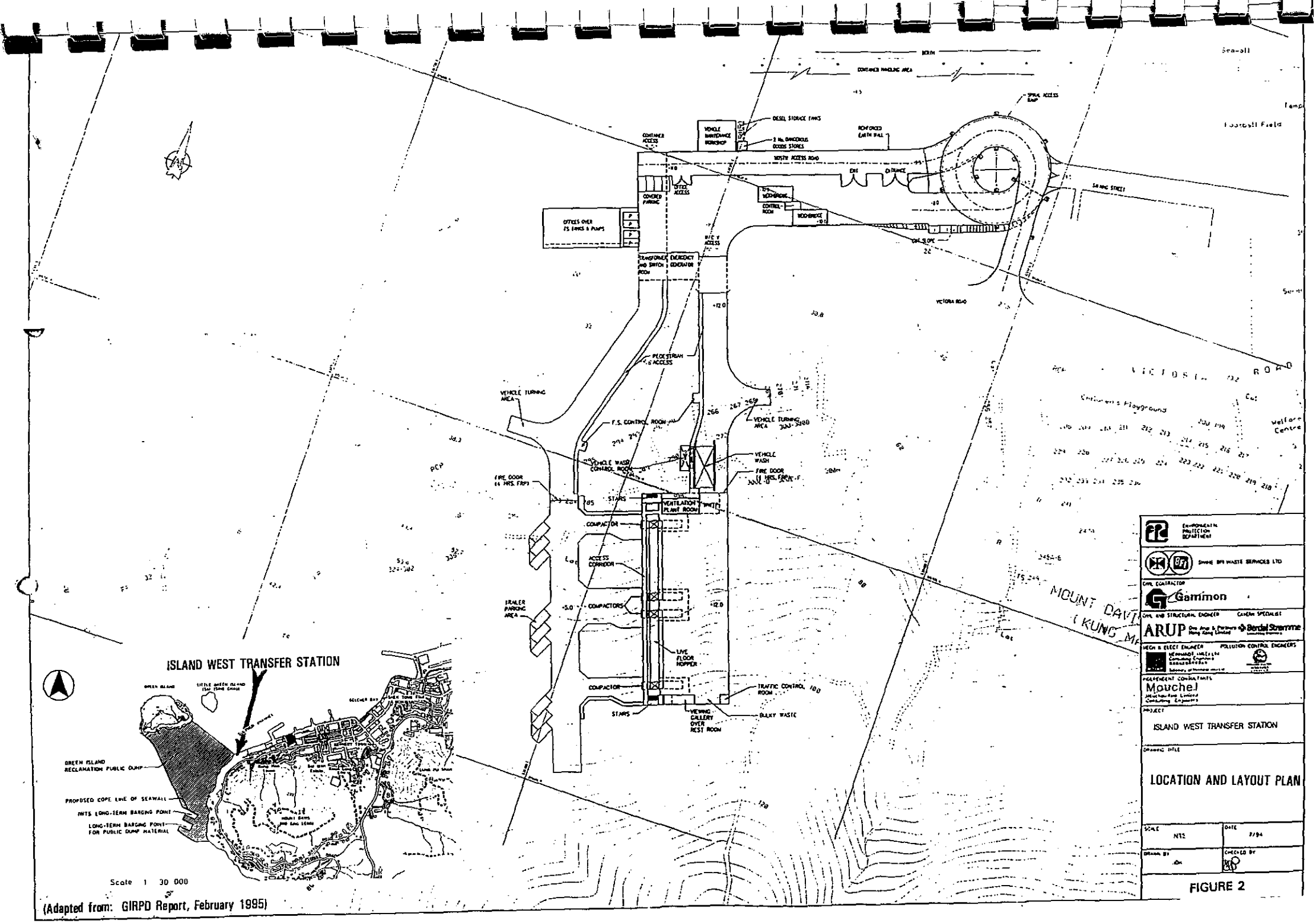


Island West Transfer Station

SWIRE BFI WASTE SERVICES LIMITED

FIGURE 1

ARTIST'S IMPRESSION OF ISLAND WEST TRANSFER STATION



ENVIRONMENTAL PROTECTION DEPARTMENT

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GAMMON SPECIALIST — Bendal Stramme

MECH & ELECT ENGINEER — POLLUTION CONTROL ENGINEERS

ENVIRONMENT CONSULTANTS
Mouchel

PROJECT
ISLAND WEST TRANSFER STATION

DRAWING TITLE
LOCATION AND LAYOUT PLAN

SCALE	DATE
NTS	7/94
DRAWN BY	CHECKED BY
JDH	

FIGURE 2

(Adapted from: GIRPD Report, February 1995)