Mott MacDonald

WEST KOWLOON RECLAMATION
FOCUSED EIA ON ROADWORKS

EXECUTIVE SUMMARY

Mott MacDonald Hong Kong Limited

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WEST KOWLOON RECLAMATION
FOCUSED EIA ON ROADWORKS

EXECUTIVE SUMMARY

Issue and Revision Record:

Rev	Date	Originator	Approved	Description
A	30.12.94	David J. Maggs Project Manager	J.D.C. Burt Project Director	Issue for Circulation

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1.Introduction

1.1 The introduction of the new roads to be constructed under Contracts WK22/94 and WK23/94 on the West Kowloon reclamation has the potential for environmental impacts on the existing residential areas along the old West Kowloon coast. This study focuses on the potential noise and air quality impacts that the construction and operation of these roads would have on the three residential areas at Nam Cheong Estate, Wong Tai Street, and Man Cheong Street. In assessing these impacts the study team has given due consideration to the engineering and practical restrictions that any mitigation measures must satisfy in order to present a realistic solution to the potential impacts, and has been guided by a Study Management Group, chaired by the EPD.

1.2 The construction of the local and distributer roads which will link the existing road network to the West Kowloon Expressway will include works within close proximity to the sensitive receivers, and consequently construction noise and dust impacts have been predicted in all three areas. Dust impacts can be mitigated by straight forward on site practices. Construction noise impacts will require a combination of mitigation measures which ultimately must be chosen by the Contractor. However, the study has developed one package of mitigation measures which would be adequate to ensure that impacts are avoided during normal daytime working hours. Further restriction to working methods would be needed if evening or Sunday working is required.

1.3 Once operational, the new road network will bring substantial volumes of traffic into areas in the vicinity of the existing sensitive receivers. This traffic will add to the background air and noise environments resulting from the existing roads and the more distant West Kowloon Expressway and P1 roads. Air quality will remain within acceptable standards, but there is potential for significant impact from traffic noise at Nam Cheong Estate and Man Cheong Street. A sophisticated computer model of the surrounding road network has been used to investigate the effectiveness and practicality of using low noise road surfaces, noise barriers and road enclosures.

2.Traffic Noise

2.1 A series of mitigation measures have been considered for the new roads to reduce noise impacts to acceptable levels in the two impacted areas. The environmental benefit and the practical difficulties associated with each type of mitigation have been assessed resulting in the following general conclusions:

- Low noise road surfaces in the form of friction course (or some future improved design of pavement surface) offer a useful noise benefit and are an effective and practical mitigation measure that should be installed on the local 'D' roads around Nam Cheong Estate and Man Cheong Street;

- Noise barriers 3m or 5m in height cannot be located in the ideal location against the kerb because of sightline/visibility requirements, which in combination with the height and proximity of the top floor receivers looking over the local roads, renders them not effective as a single solution in both receiver areas.

- At Man Cheong Street, noise contributions from distant proposed roads and existing roads are such that even if total enclosures are provided on local roads to the north and south the traffic noise assessment criterion cannot be achieved. However, if an enclosure is provided to the local road to the west the traffic noise assessment criterion can be achieved on the west facade.

- Setting aside cost and technical considerations, semi-enclosures together with low noise road surfacing would be capable of avoiding traffic noise impacts at Nam Cheong Estate.

2.2 In considering the best practical measures to be adopted, it is necessary to balance the respective merits of the options taking all factors into account. Although enclosures provide the necessary mitigation at Nam Cheong Estate, considerations of cost alone would pre-empt their selection since they would be extremely expensive when compared to the costs of indirect mitigation, and could not therefore be considered as cost effective. It should also be noted that whilst the analysis has identified the impacts at the chosen receivers within the estate, not all facades have been modelled. Since it is not practical to cover junctions there may be dwellings which could be exposed to unacceptable noise levels. Enclosures are also visually intrusive and, have wider ramifications for both pedestrians and motorists alike. Indirect mitigation, i.e. noise insulation, also poses additional recurrent costs to residents for the life expectancy of the dwellings which may prove a burden to residents.

2.3 In terms of cost, the provision of semi-enclosures at Nam Cheong Estate together with low noise road surfacing is estimated to be of the order of HK$189 million compared to the cost of indirect measures which are estimated to be of the order of HK$20 million. At Man Cheong Street the cost of insulation and air conditioning is estimated to be of the order of HK$45 million and, as in the case of Nam Cheong Estate, a further detailed study would be required to establish the exact number of dwellings impacted and the accurate cost of the indirect measures.

2.4 On review of all factors considered the most practical and cost effective measure to mitigate the impacts identified at both Man Cheong Street and Nam Cheong Estate would be insulation and air conditioning since this would provide a single solution to the impacts identified. **This mitigation measure is therefore recommended.**

3.Air Quality

3.1 The study has included detailed air quality modelling of the pollutants that will be introduced from the traffic on the proposed road network, and has concluded that no significant air quality impacts will occur.

4.Construction Noise

4.1 In the absence of any mitigation measures, construction noise impacts are predicted at all sensitive receivers. These would result due to the proximity of the works and the cumulative effect of different construction activities within the large area covered by the Contracts occurring simultaneously. The study has considered the worst case cumulative effects and has identified a variety of mitigation measures that would be effective in mitigating these impacts. These include 'quiet plant', on site noise management, a series of 3m and 5m static and mobile noise barriers along the boundary of works areas and, in particular areas, specific limitations on the source noise levels of plant in operation. The study has shown that a combination of these measures can achieve compliance with the daytime $L_{eq,\ 30\ minutes}$ 75 dB assessment criterion, and would ensure that impacts were avoided.

4.2 However, it must be noted that this assessment is based on assumed construction periods and items of plant for the various construction activities which may well differ from that proposed by the Contractors. It would therefore be preferable for the Contractors to develop their own mitigation measures based on their choice of equipment and working methods and for each to demonstrate, prior to construction, that the daytime $L_{eq,\ 30\ minutes}$ 75 dB assessment criterion will be satisfied, or if not, to propose their own package of mitigation measures. It is recommended that appropriate clauses be included in the contract Specifications for both Contracts WK22/94 and WK23/94 to meet these requirements.

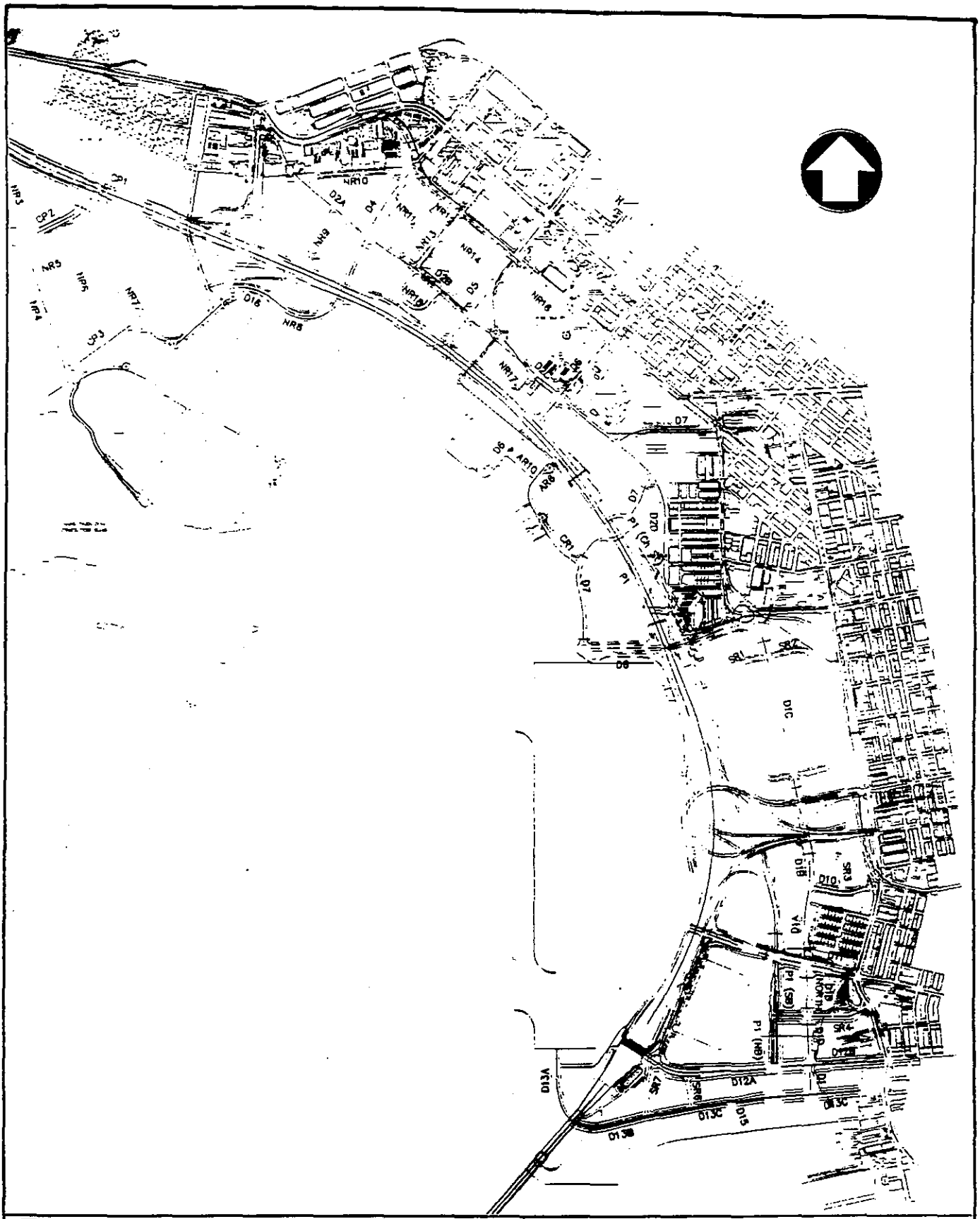
4.3 Noise impacts of construction working on Sundays (which may be required if the programming of the works becomes difficult), have not been considered in detail. However, for Sunday working the Contractor will be required to achieve a further 5-10 dB of mitigation in accordance with the requirements of the Noise Control Ordinance, and he will be required to demonstrate that this can be achieved in order to obtain a Construction Noise Permit from the EPD.

4.4 Although it is outside the scope of this study to consider environmental monitoring and auditing requirements, **it is recommended that in view of the potential for significant noise impacts at the majority of NSRs, a noise monitoring and auditing programme covering the whole of the construction phase should be implemented.** This should be carried out either by the project proponent or by the Environmental Protection Office (ENPO 1). The results should be processed by ENPO 1 to allow consideration of cumulative impacts from other construction works on the WKR.

5.Construction Dust

5.1 In the absence of any mitigation measures, dust impacts are predicted at all sensitive receivers. These would results mainly from the large numbers of truck movements within the construction area. Mitigation measures in the form of a variety of watering procedures and limiting the speeds of trucks on unpaved haul roads to 10 kph would control these impacts to acceptable levels. It is recommended that appropriate clauses be included in aforementioned contract Specifications.

5.2 **It is recommended that in view of the potential for significant dust impacts at the majority of ASRs, an air quality monitoring and auditing programme should be implemented,** in a similar way to that described for noise above.



HONG KONG GOVERNMENT
TERRITORY DEVELOPMENT DEPARTMENT
KOWLOON DEVELOPMENT OFFICE

WEST KOWLOON RECLAMATION

FOCUSED EIA ON ROADWORKS STUDY AREA

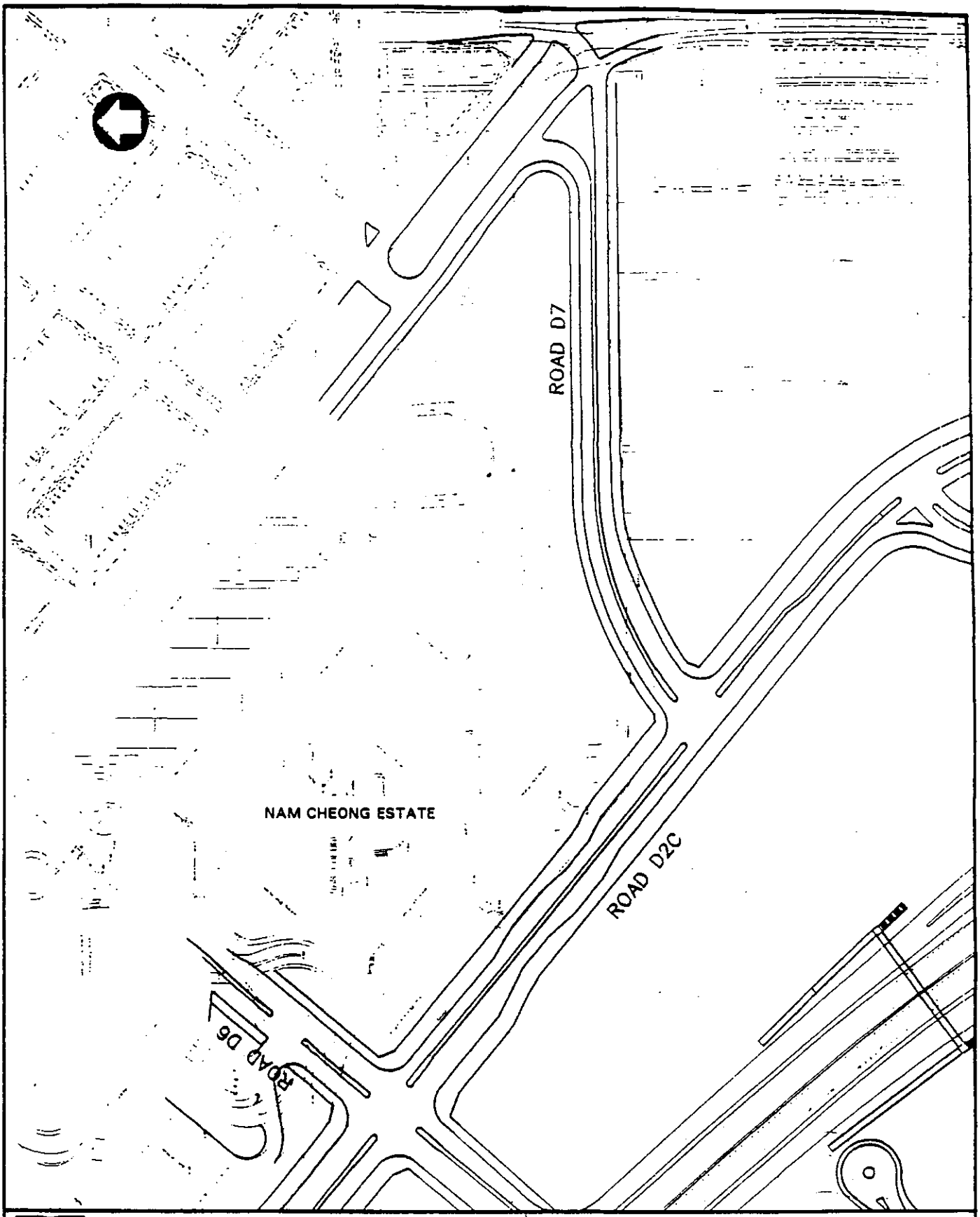
Consultants
Mott MacDonald Hong Kong Ltd.
in association with
L.G. Mouchel & Partners (Asia)
Urbis Travers Morgan Ltd.
EKM (HONG KONG) MVA Asia. Leigh & Orange Ltd..
Dredging Research Ltd.
First Pacific Davies (Hong Kong) Ltd.

Mott MacDonald
Tel No. 828 5757
Fax No. 827 1823

Scale

Rev.

Figure 1



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WEST KOWLOON RECLAMATION

FOCUSED EIA ON ROADWORKS

ROAD LAYOUT

Consultants
Mott MacDonald Hong Kong Ltd.
in association with
L.G. Mouchel & Partners (Asia)
Urbis Travers Morgan Ltd.
KBM (HONG KONG) MVA Asia. Leigh & Orange Ltd.,
Dredging Research Ltd.
First Pacific Davies (Hong Kong) Ltd.

Mott MacDonald
Tel No. 828 5757
Fax No. 827 1823

Scale 1 : 3000

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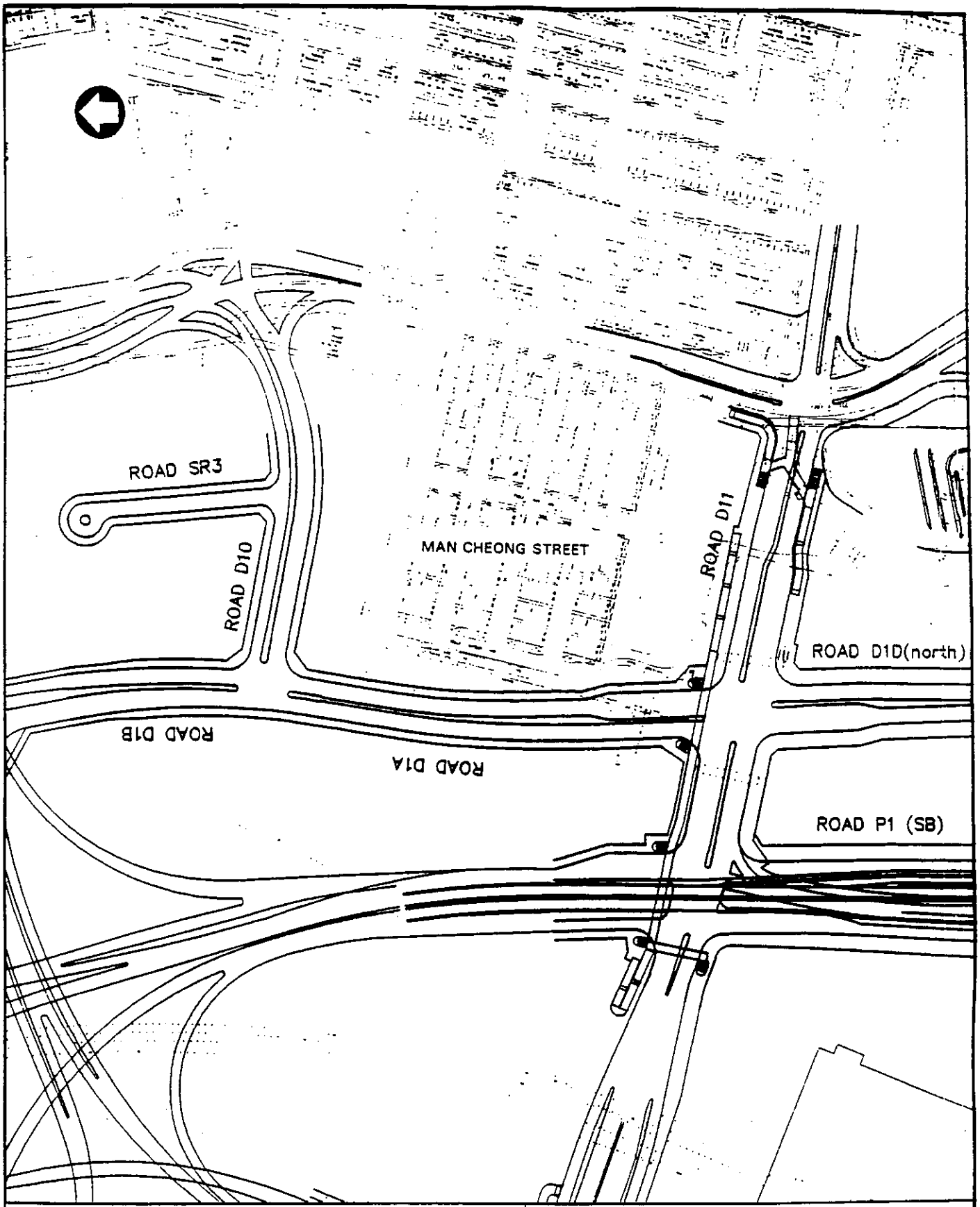
Figure 2



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Mott MacDonald
Tel No. 828 5757
Fax No. 827 :823

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Figure 3