

SECTION C

THE EASTERN ACCESS ROAD (EAR) TO KAM TIN STATION

14. EXISTING ENVIRONMENT AND SENSITIVE RECEIVERS FOR KAM TIM

14.1 Noise

14.1.1 Baseline Conditions

From site inspections the existing ambient noise within the EAR study area is dominated by road traffic on Kam Sheung Road, Kam Tin Road and Route 3. The existing Kam Tin Road will be widened to a dual-2 carriageway in the future together with the operation of the Kam Tin By-pass, the existing noise baseline (i.e. without the EAR) is likely to increase. There are several minor industrial premises scattered along the proposed route which will also affect the localised noise baseline conditions.

The planned West Rail alignment and the opened public transport interchange will be strictly controlled by the NCO and EIAO and it is therefore concluded that the baseline noise environment within the study area will continue to be dominated by road traffic noise.

14.1.2 Noise Sensitive Receivers

Representative Noise Sensitive Receivers (NSRs) have been identified within a spatial scope of 300 m from the Project boundary and are shown by *Figure 14.1a*. The identified NSRs are listed below in *Tables 14.1a* and have been selected according to *Annex 13 (Guidelines for Noise Assessment)* of the EIA O TM.

Table 14.1a - Identified Noise Sensitive Receivers in Kam Tin

NSR	Description
71	School Area near Kam Tin By-pass Roundabout, facing Kam Tin River
72	Village House, North of Tsz Tong Tsuen, near North Bank of Kam Tin River
73	Village House, East of St. Joseph's Primary School
74	Village House of Tsz Tong Tsuen East, South Bank of Kam Tin River
75	Village, House of Tsz Tong Tsuen South, North of Kam Sheung Road
75a	Village House of Tsz Tong Tsuen South, North of Kam Sheung Road
75b	Village House of Tsz Tong Tsuen South, North of Kam Sheung Road
76	Village House of Tsz Tong Tsuen South, North of Kam Sheung Road
76a	Village House of Tsz Tong Tsuen South, South of Kam Sheung Road
77	Village House of Yee Hong Garden East, South of Kam Sheung Road

NSR	Description
77a	Village House of Yee Hong Garden East, South of Kam Sheung Road
78	St. Joseph's Primary School
79	Village House, East of Yee Hong Garden
80	Village House, East of Yee Hong Garden
82	Village House at south of Yee Hong Garden
83	Village House, South of Ball Kee Factory
84	Village House, South of Ball Kee Factory
85	Village House, South of Ball Kee Factory
86	Village House, South of Ball Kee Factory
87	Village House, East of Ball Kee Factory
89	Lutheran Kam Sheung Church
90	South of Ng Ka Tsuen, North of Kam Sheung Road
91	South of Ng Ka Tsuen, North of Kam Sheung Road
92	South of Ng Ka Tsuen, North of Kam Sheung Road (near the Proposed Subway)
93	West of Ng Ka Tsuen, North of Kam Sheung Road, Next to Eastern Access Road
94	West of Ng Ka Tsuen, North of Kam Sheung Road, Next to Eastern Access Road
95	West of Ng Ka Tsuen, North of Kam Sheung Road, Next to Eastern Access Road
96	West of Ng Ka Tsuen, North of Kam Sheung Road, Next to Eastern Access Road
97	West of Ng Ka Tsuen, North of Kam Sheung Road, Next to Eastern Access Road

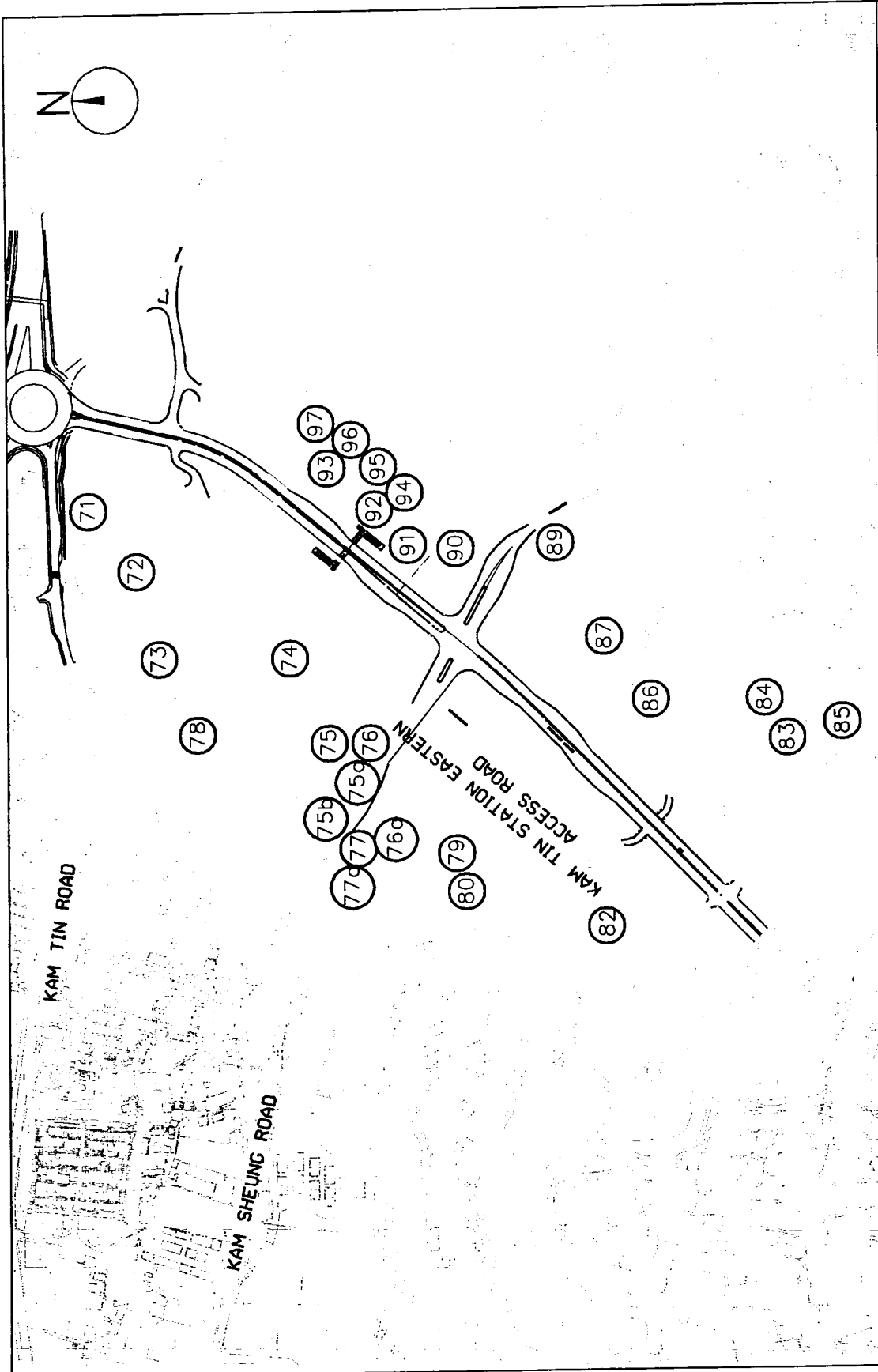
Existing NSRs are affected by the traffic noise from Kam Sheung Road, Kam Tin Road and Route 3. The majority of the NSRs identified is low-rise village type development, without the project these NSRs are affected mainly by traffic noise. St. Joseph's Primary School, Lutheran Kam Sheung Church and the school area near Kam Tin By-pass roundabout may also be potentially affected by the Project, these NSRs are included in this study.

14.2 Air Quality

14.2.1 Baseline Conditions

The main land uses in the study area are mainly schools, scattered villages, industrial premises and fish ponds. The Kam Tin Road and Kam Sheung Road are the two main access routes into the study area. According to the 1996 *Traffic Census*, the average annual daily traffic flows on Kam Tin and Kam Sheung Road was 8700 and 22360 respectively. In addition, Route 3 is located in the vicinity of the EAR and is another major source of air quality impact. Traffic emissions can therefore be considered as a major source of air quality impact to the area.

In accordance with *EPD's draft Guidelines for Local-scale Air Quality Assessment Using Models*, the Kam Tin area is classified within the Rural/New Development category.



LOCATION OF NOISE SENSITIVE RECEIVERS IN KAM TIN FIGURE 14.1a
 SCALE: 1/5,000



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major source of air quality impact. Traffic emissions can therefore be considered as a major source of air quality impact to the area.

In accordance with *EPD's draft Guidelines on Assessing the Total Air Quality Impacts*, the Kam Tin area is classified within the Rural/New Development category. Concentrations of pollutants based on the EPD's annual average results from their fixed monitoring station for the past five years (1992 - 1996) have been calculated, and the background air quality for Rural/New Development Areas is summarised in *Table 14.2a*. Background CO levels have not been provided in the guidelines and annual average CO data for 1996 of Kwai Chung Monitoring Station was employed as CO background.

Table 14.2a Background Air Quality (μgm^{-3})

Pollutant	Annual Average
NO ₂ ⁽ⁱ⁾	39
RSP ⁽ⁱ⁾	51
TSP ⁽ⁱ⁾	87
CO ⁽ⁱⁱ⁾	490

Note: Data based on *EPD's Draft Guidelines for Local-scale Air Quality Assessment Using Models*

(ii) Monitored at Kwai Chung Monitoring Station

14.2.2 Air Sensitive Receivers

In accordance with the Study Brief, the spatial scope for the assessment of the air quality is defined as 500 metres from the project boundary. The assessment includes representative *Air Sensitive Receivers* (ASR) which are defined by *Annex 12* of the EIA O TM as the following: domestic premises, hotels, hostels, hospitals, clinics, nurseries, temporary housing accommodation, schools, educational institutions, offices, factories, shops, shopping centre, places of public worship, libraries, courts of law, sports stadium or performing arts centres are all considered to be a sensitive receiver. In accordance with *Annex 12*, representative air sensitive receivers were identified. These are presented in *Table 14.2 b* and their locations are shown in *Figure 14.2 a*.

Table 14.2 b Identified Representative Air Sensitive Receivers

Air Sensitive Receivers	Name	Horizontal Distance (m)
A1	Residence South of Kam On Garden	75
A2	Factory located at the south-west of Lutheran Kam Sheung Church	40
A3	Lutheran Kam Sheung Church	25
A4	Ng Ka Tsuen	20
A5	Kiu Tau Tsuen	50

14.3 Water Quality

14.3.1 Baseline Conditions

In general, the streams along the West Rail Phase I alignment are grossly polluted by discharges from livestock farms, unsewered villages and, in some cases, industrial establishments. The existing downstream water quality is generally poor, and construction activities related to the EAR should not cause any further deterioration in baseline conditions.

Site investigations were conducted during the West Rail Phase I EIA to check for any recent changes in water quality and any noticeable discharge sources. During site visits, no ground water abstraction points were found within the West Rail alignment or the EAR study area. It is therefore unlikely that any ground water catchment falls within the EAR study area.

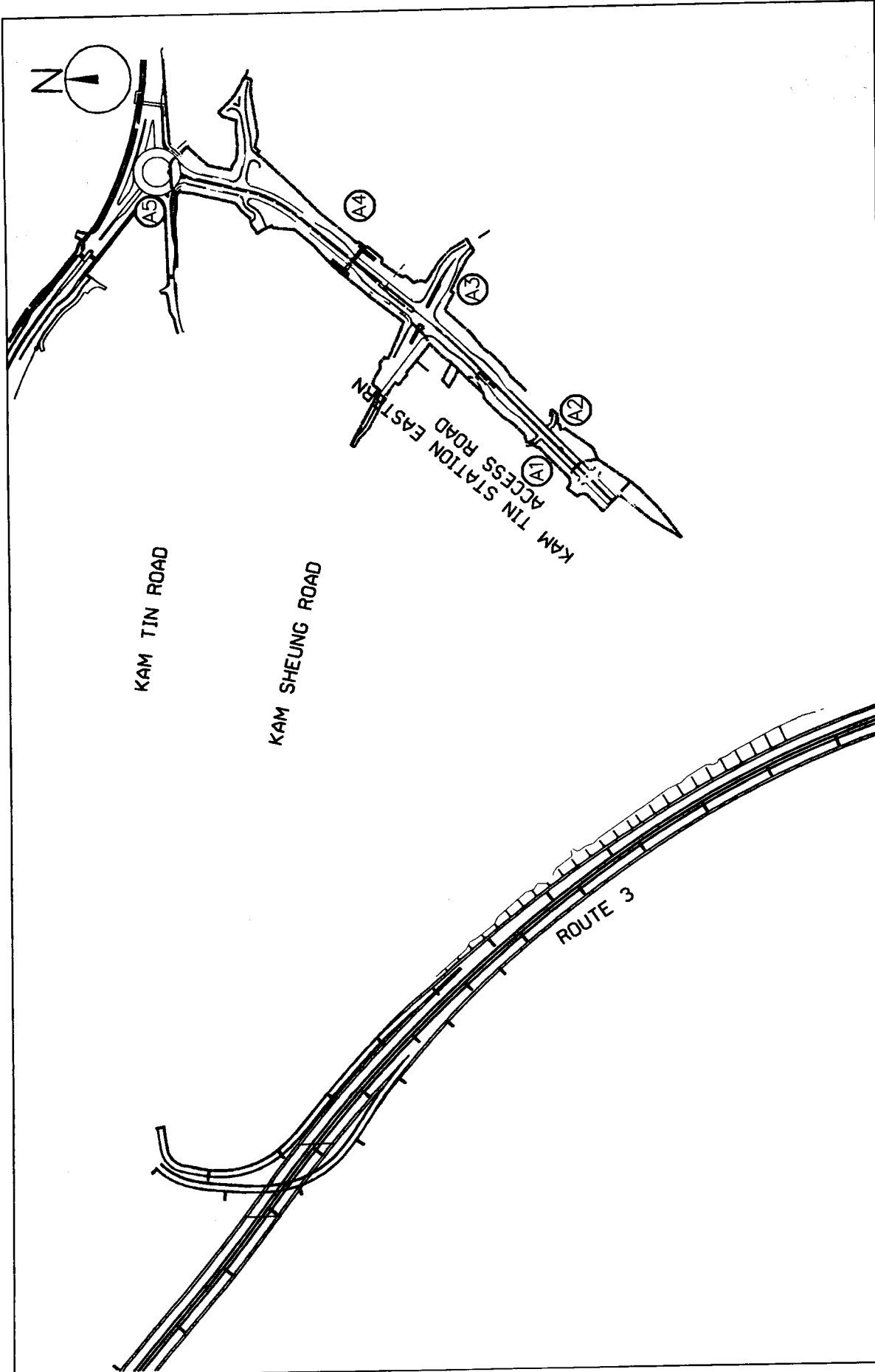
14.3.1.1 Kam Tin River

Kam Tin River is one of the larger catchment areas in the North West New Territories and meanders across the flood plain of the Kam Tin valley. The Kam Tin River and its tributaries are the major surface water bodies in the area and are prone to flooding.

The water quality of the Kam Tin River is regularly monitored by the EPD's river water monitoring programme and the relevant monitoring stations are KT1 and KT2. A summary of the currently available EPD monitoring data for stations KT1 (for 1996) and KT2 (for 1997) is given in *Table 14.3a*.

Table 14.3a Summary Statistics of 1996 and 1997 Water Quality for Kam Tin River

Parameter	KT1 (1996)	KT2 (1997)	WQOs for inland waters of Deep Bay WCZ
DO (% Saturation)	17.6 (5.8-41.7)	n.a.	n.a.
DO (mg/L)	2.3 (0.4-12.5)	1.5 (0.1-5.4)	4 mg/L
BOD ₅ (mg/L)	43.1 (12.0-110.0)	48.0 (6.0-130.0)	3 mg/L
COD (mg/L)	68.1 (20.0-230.0)	68.0 (10.0-330.0)	15 mg/L
Oil and Grease (mg/L)	3.6 (0.5-22.0)	2.7 (0.5-21.0)	n.a.
Suspended Solids (mg/L)	51.1 (21.0-130.0)	41.0 (14.0-260.0)	Annual median 20 mg/L
Turbidity (NTU)	36.7	n.a.	n.a.



LOCATION OF AIR SENSITIVE
RECEIVERS IN KAM TIN

SCALE: 1:7,500

FIGURE 14.20

net-2/earth/c01888/resp.dgn



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Parameter	KT1 (1996)	KT2 (1997)	WQOs for inland waters of Deep Bay WCZ
	(14.0-65.0)		
Ammoniacal N (mg/L)	17.06	27.00	n.a.
	(8.20-30.0)	(4.20-60.00)	
Total Kjeldahl N (mg/L)	23.4	35.50	n.a.
	(10.0-43.0)	(5.40-76.0)	
Total P (mg/L)	4.67	7.60	n.a.
	(2.00-9.40)	(1.20-15.00)	
pH	7.0	7.4	6.5 - 8.5
	(6.7-7.3)	(7.1-7.5)	

Note:

Data presented are annual arithmetic means, except where otherwise indicated.

Data enclosed in brackets indicate ranges.

n.a. = not available

Source: EPD River Water Quality in Hong Kong 1997

The Kam Tin River has been badly affected by discharges of livestock waste. The EPD monitoring data for 1996 and 1997 show that water quality at the two monitoring stations was very bad. Low DO levels, high BOD₅ and COD contents and high SS levels were observed during both years.

The Kam Tin River and its tributaries have been designated for channel improvement works by TDD/DSD to alleviate recurrent flooding in the area.

14.3.2 Water Sensitive Receivers (WSRs)

Potential WSRs likely to be affected by the EAR construction works comprise the tributaries of the Kam Tin River and local fish/duck ponds.

14.4 Landscape and Visual

14.4.1 Baseline Conditions

14.4.1.1 Planning Context

The study site is bordered by Kam Tin to the north, the Tsing Long Highway to the west, and Shek Kong Camp to the east, and is dissected by the north-south alignment of Kam Sheung Road. The site comprises actively managed agricultural land interspersed by the village developments of Ng Ka Tsuen to the east, and Tai Hong Tsuen and Tsz tong Tsuen to the west. Land use zonings are indicated on the Kam Tin South OZP No. S/YL-KTS/2 (12.2.99).

Land within the study area is primarily designated Village Type Development (V) to the north, Residential (Group D) (R(D)) around Ng Ka Tsuen to the east, and Agriculture (AGR) or Undetermined (U) to the south. The proposed Eastern Access Road will pass through (V) and (U) designations in approximately equal measures as it passes north-south to link Kam Tin Road with the proposed West Rail Station, situated to the east of the Tsing Long Highway.

14.4.1.2 Landscape Resources

The Baseline Landscape Conditions are indicated at *Figure 14.5a*. The landscape resources comprise:

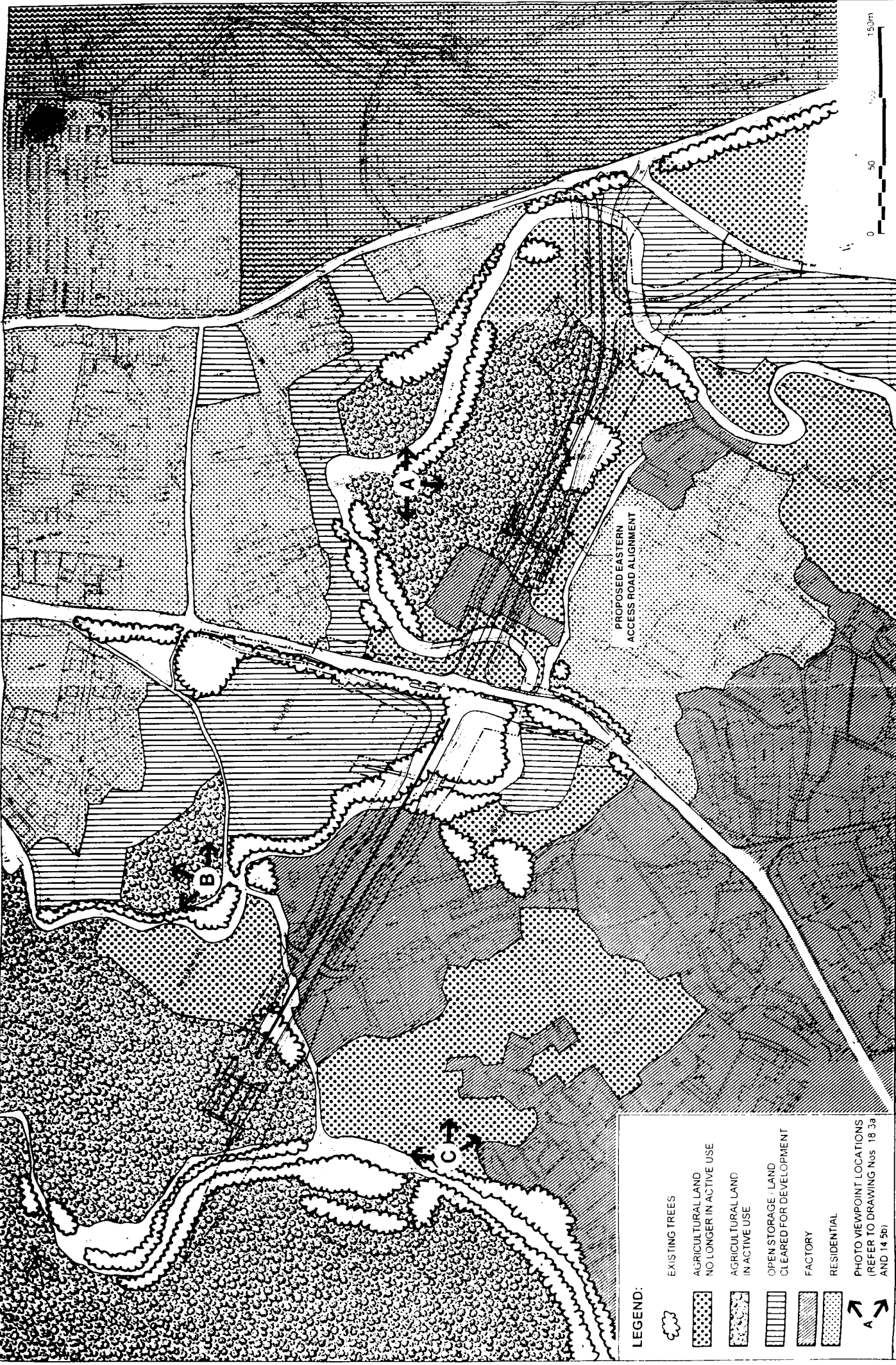
- actively maintained agricultural field systems;
- natural alignment of Kam Tin River and tributaries;
- scattered woodland/mature trees along river edges;
- traditional low rise village development at Ng Ka Tsuen; and
- environmental improvements along Kam Sheung Road.

14.4.1.3 Landscape and Visual Character

Photograph views of the Study Area are indicated at *Figures 14.5b* and *14.5c*. The area between Route 3 in the south and Kam Tin Road in the north is low lying and flat in nature with the attractive backdrop of the hillsides of Lam Tsuen Country Park and Tai Lam Country Park to the north and south respectively. Agriculture is the predominant land use and the majority of fields are actively maintained for this purpose. To the south of the site land rises gently to the new Route 3 corridor which visually dominates the surrounding area. Vegetation across the site is limited to an intensively maintained field system and areas of grassland and emergent scrub where agriculture is no longer practised. A network of embankments are located along field boundaries and mature trees are located in corridors along the embankments and the banks of the Kam Tin River. The river winds through the site in a circuitous route, generally demarcating areas of agriculture industry and housing. The river is very polluted and there appears to be limited signs of aquatic life within its waters.

Residential development generally consists of 2-3 storey housing situated at the villages of Tsz Tong Tuen, Tai Hong Tsuen, Wing Lung Wai, Kiu Tau Tsuen and Ng Ka Tsuen. The latter is an old development and contains a variety of attractive traditional stone buildings. South of Tai Hong Tsuen is a new development of 'Spanish Style' 3 storey residences typical of low density residential development throughout the New Territories (refer to View A - *Figure 14.5b*).

There are two factory sites within the study area. To the south of Kam Sheung Road is located a collection of old single storey factory buildings of varying sizes and conditions (refer to View C - *Figure 14.5c*). The site appears to be generally well used and the majority of buildings are operational. To the north, at the junction between Kam Sheung



- LEGEND:**
- EXISTING TREES
 - AGRICULTURAL LAND NO LONGER IN ACTIVE USE
 - AGRICULTURAL LAND IN ACTIVE USE
 - OPEN STORAGE / LAND CLEARED FOR DEVELOPMENT
 - FACTORY
 - RESIDENTIAL
- PHOTO VIEWPOINT LOCATIONS
(REFER TO DRAWING Nos 18 3a
AND 14 5b)

KCR 西鐵 West Rail

KCR WEST RAIL DEPOT AND STATION
EASTERN ACCESS ROAD FOR
WEST RAIL STATION IN KAM TIN
BASELINE LANDSCAPE CONDITIONS

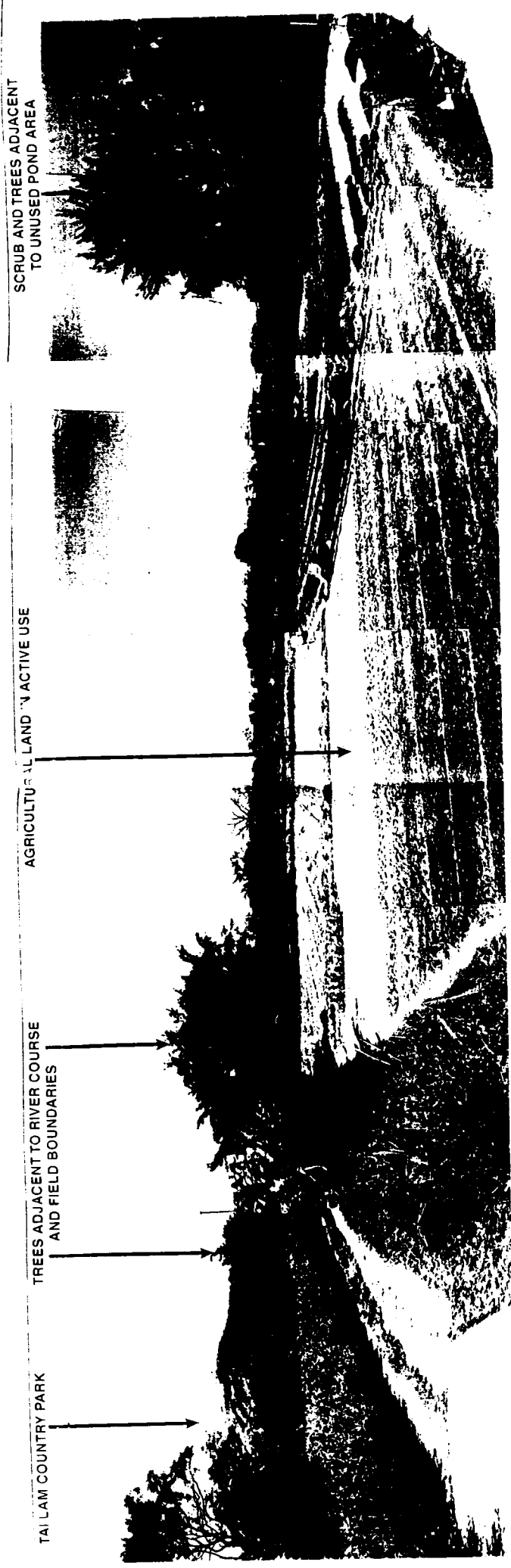
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FIGURE 14.5b



DESIGNED BY: N. CHAN
DRAWN BY: A. CHAN
CHECKED BY: N. CHAN
DATE: 14/03/2011






VIEW C - NORTH TO WEST



VIEW C - NORTH TO EAST

NOTE: REFER TO FIGURE No. 14.5a FOR PHOTO VIEW LOCATION

 <p>九廣鐵路</p>	<p>西鐵 West Rail</p>	<p>26300</p>
<p>LANDSCAPE CHARACTER AREAS</p>		
<p>VIEW C</p>		

KCRC WEST RA - DEPOT AND STATION
EASTERN ACCESS ROAD FOR
WEST RAIL STATION AT KAM TIN

FIGURE 14.5c

Road and the access road to Ng Ka Tsuen, is located the Lim Mei Carpet Manufacturing Co. Ltd. This large single storey warehouse-type structure visually dominates the agricultural land between Tsz Tong Tsuen and Ng Ka Tsuen.

A major feature of the study area is widespread open storage, which is beginning to visually dominate northern areas of the site. At the northern boundary of the corridor open storage is the dominant land use along the Kam Tin Road adjacent to Kam Tau Tsuen and along Shek Kong Airfield Road adjacent to Ng Ka Tsuen. Storage in these areas consists mainly of derelict vehicles the majority of which are stacked high within the boundaries of each 'scrap yard'. An additional area of extensive open storage exists to the south on the southern edge of Kam Sheung Road. This large area is contained by the Kam Tin River on its southern boundary and is located on the site of two former ponds. It may be noted that recent environmental improvements constituting tree and shrub planting have been implemented along the southern side of Kam Sheung Road and these are already providing effective screening to the open storage area.

The proposed Kam Tin River Training scheme is indicated at *Figure 18.3a*. The scheme will substantially degrade the landscape and visual character of existing agricultural land to the immediate south and west of the proposed development. It is considered that the landscape sensitivity of these areas will therefore be reduced. The Landscape Impacts of the Eastern Access Road are considered within this context. This study does not address the impacts of the river training scheme.

14.4.1.4 Zone of Visual Influence

The Zone of Visual Influence (ZVI) is indicated at *Figure 14.5d*.

The Eastern Access Road will be visible from residents at the western edge of Ng Ka Tsuen and the eastern edge of Tsz Tong Tsuen. Visually sensitive receivers (VSRs) located on upper east-facing floors of St. Joseph's Primary School at Tsz Tong Tsuen will receive clear views of the development. Residents within Kiu Tau Tsuen may be screened from the development by open storage, despite their location adjacent to its northern junction at Kam Tin Road. Insubstantial filtered views of the northern alignment and junction may be possible from Wing Lung Wai though mature trees adjacent to the Kam Tin River will screen the majority of works. There will be similarly filtered views from the south facing houses on the southern edge of new residential development south of Tsz Tong Tsuen.

There will also be distant views of the development from the Route 3 corridor at the southern end of the alignment. These views will be maximised by the flat open nature of the land and the lack of mature woodland. Motorists and pedestrians on Kam Sheung Road and Kam Tin Road will receive direct views of the development at its junctions with both routes.

Photomontages in *Figures 18.3c* and *d* indicate the visual characteristics of the Eastern Access Road, which will remain largely similar along the entire alignment. It is

considered that the photomontages are also illustrative of the development viewed from west of Kam Sheung Road, where factory buildings are currently located.

14.4.2 Visual

14.4.2.1 Visually Sensitive Receivers during the Construction Stage

The Key Visually Sensitive Receivers (VSRs) during the Construction Stage are illustrated at *Figure 14.5d* and listed below:

- west facing residents on western edge of Ng Ka Tsuen;
- east facing residents on eastern edge of Tsz Tong Tsuen;
- south facing residents on southern edge of new residential development south of Tsz Tong Tsuen;
- residents at church accommodation adjacent to Kam Sheung Road;
- workers within north facing industrial buildings on northern edge of industrial estate south of Kam Sheung Road;
- staff and students at St. Joseph's Primary School (upper east facing floors only);
- motorists on Route 3; and
- motorists and pedestrians on Kam Tin Road.

14.4.2.2 Visually Sensitive Receivers during the Operational Stage

The Key Visually Sensitive Receivers (VSRs) during the Operational Stage are illustrated at *Figure 14.5d* and listed below:

- west facing residents on western edge of Ng Ka Tsuen;
- east facing residents on eastern edge of Tsz Tong Tsuen;
- south facing residents on southern edge of new residential development south of Tsz Tong Tsuen;
- residents at church accommodation adjacent to Kam Sheung Road;
- workers within north facing industrial buildings on northern edge of industrial estate south of Kam Sheung Road;
- staff and students at St. Joseph's Primary School (upper east facing floors only);
- motorists on Route 3; and
- motorists and pedestrians on Kam Tin Road.

14.5 Land Contamination

14.5.1 Baseline Conditions

The potential for soil and land contamination exists in some areas along the EAR where current or historic land uses have impacted upon the land. The objective of this study is therefore to identify and evaluate any concerns with respect to the potential soil and groundwater contamination where they may be an interface with the underlying soil. The survey of potential land contamination relates primarily to the industrial buildings located along the EAR which will have to be cleared to make way for the new road.

Depending upon the findings of the desk top study, there may be a need to conduct sampling programmes at certain sites to evaluate the extent of any contamination prior to commencement of the development programme. Based on the findings of a site investigation programme, there may need to develop remedial plans for dealing with any contaminated soil or groundwater identified.

Any contaminated soil or groundwater encountered during the development programme will need to be handled appropriately in accordance with EPD's guidance document *Professional Person Environmental Consultative Committee Practice Note 3/94- Contaminated Land Assessment and Remediation* (ProPECC PN 3/94), and the *Technical Memorandum on Environmental Impact Assessment Process (EIA O TM)*.

14.6 Ecology

14.6.1 Baseline Conditions

The Kam Tin Valley comprises a mosaic of village, agricultural and developed areas, and the main ecological impact is anticipated to be localised habitat loss. The Study has therefore been focused on an area 500m either side of the new road, within which sensitive ecological resources having been identified on the basis of literature review, aerial photography and ecological field surveys.

14.6.1.1 Flora and Habitat

The study area comprises mainly developed land for village/light industry/open storage uses, with the remaining areas consisting of a range of habitats which include several small patches of woodland, active/inactive agricultural land, wasteland, two fishponds and the Kam Tin River.

14.6.1.2 Invertebrate Fauna

The literature review and field surveys of invertebrate fauna were confined to the orders Lepidoptera and Odonata because within Hong Kong the field identification and taxonomy for these groups is better studied than for other invertebrates. Non-systematic surveys included use of photography and capture/release to identify individuals to the lowest possible taxon.

14.6.1.3 Vertebrate Fauna

Literature was reviewed to identify sites and species which were known to be of conservation importance. Non-systematic bird surveys were undertaken to identify whether potentially important species existed in the study area.

14.6.1.4 Reptiles and Amphibians

Non-systematic surveys for reptiles and amphibians were also carried out at the same time as the flora and avifauna surveys.

14.6.1.5 Aquatic Fauna

An assessment of the aquatic wildlife was also undertaken at the same time as the other surveys.

The EAR proposes to cross the Kam Tin River at two locations, both of which will be affected by the new Main Drainage Channels works scheduled to commence in 1999-2000. The Kam Tin River is considered to be grossly polluted with effluents from livestock and processing, residential sewage and light industrial liquid wastes affecting it. The water quality in the river has been classified as "very bad" since monitoring was instituted by the EPD in 1984 (EPD,1996).

14.7 Cultural and Heritage

14.7.1 Existing Conditions

No buildings or structures of known historical or cultural importance have been identified within 300 metres of the EAR alignment.

Preliminary data gathering during the West Rail EIA has shown that no known archaeological sites will be directly affected by the EAR or indeed the West Rail Phase I alignment.

As part of the West Rail EIA Study, a series of maps of archaeological potential were prepared which assigned a low to medium potential to the Kam Tin River floodplain. The West Rail predictive model of archaeological potential has subsequently been tested through field evaluations which included the excavation of a series of evaluation trenches on the valley floor during May - June 1999 (ERM, in preparation).

Although radiocarbon determination are yet to be reported, the field evaluations revealed pottery covering periods from the late Bronze Age/early Iron Age (c.1,000 - 220 BC) to the Qing dynasty (c.1644-1911). In the historic period, the quantities of Southern Song (c.1127-1279AD) pottery and roof tiles suggested that some settlement was taking place in the Kam Tin valley during that period.

In addition to the historic material recovered during the field evaluations, several large fragments of 'net impressed' pottery, identified as dating from the South Coastal China late Bronze Age (c. 1,500 -221BC) indicating utilisation of the area (though not necessarily permanent settlement) by prehistoric communities.

The results of the West Rail Archaeological Field Evaluations indicate therefore that the EAR alignment is likely to disturb historic, and possibly, prehistoric archaeological deposits.