ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE (CAP 499) S.5(1)(a)

PROJECT PROFILE FOR DESIGNATED PROJECT ON KCRC (CAPITAL PROJECTS PLANNING DEPARTMENT) SHEUNG SHUI TO LOK MA CHAU SPUR LINE

Contents

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A. BASIC INFORMATION

a. Project Title:

Sheung Shui to Lok Ma Chau Spur Line.

b. Proposer and Nature of the Project:

Kowloon-Canton Railway Corporation (KCRC);
To extend the KCR East Rail network from Sheung Shui to the 2nd rail cross-boundary point at Lok Ma Chau.

c. Name of Project Proponent

Kowloon-Canton Railway Corporation (KCRC).

d. Location and Scale of Project and History of the Site

The proposed 7.3 Km long, double-tracked Spur Line will be built at grade, on embankment, through a cutting and on viaducts. It is designed for passenger traffic only, using through train services meshed with the existing East Rail System. The works will include the construction of the rail line segment spanning from Sheung Shui to Lok Ma Chau, and the construction of a new station at Lok Ma Chau. The station will be designed to enable it to be expanded in the future as patronage increases. A possible new Sheung Shui Station is also envisaged in the future with a tentative completion date of 2016. Figure 1 gives the alignment and location of the proposed Spur Line.

The Lok Ma Chau Station has a plan area of approximately 32,500 m^2 and an island platform. The Station building will comprise 3 storeys, with departure and arrival halls and legal entrants hall/tidal flow on each floor. A double-decked footbridge will be constructed to link up with the proposed Huanggang Metro Station at the Shenzhen side.

From Sheung Shui the Spur Line will pass beneath Po Shek Wu Road then rise at 2.5% (1:40) gradient. Following this the elevated Spur Line on a viaduct will become level and will head west passing above the former Sheung Shui Temporary Housing Area. The viaduct will typically be at between 9 and 10m height and above the Shek Sheung River and Sheung Yue River flood plains, before reaching the rising ground in the Kwu Tung region. For about 2km between Dills Corner Camp and Chau Tau, the Spur Line will be on an embankment and at grade before passing through a cutting at Pak Shek Au. Land will be reserved for a possible *Kwu Tung Station*, which would primarily consist of two side-

platforms. Turnouts will be provided at Pak Shek Au and Kwu Tung for possible connection between the Spur Line and the future West Rail to Kam Tin. At Chau Tau the Spur Line will pass again onto a viaduct after a short length of embankment.

The Spur Line will turn northwards running parallel to San Sham Road. After passing through Ha Wan Tsuen, the elevated Spur Line will pass over San Sham Road and immediately over the proposed San Tin drainage channel, towards Lok Ma Chau. An associated station access road will be constructed, which spans from Lok Ma Chau Road to the proposed Lok Ma Chau Station.

Proposed Alignment and Lok Ma Chau Station

The Spur Line will utilise viaducts except for approximately 2km between Dills Corner Camp and Chau Tau. The viaduct will generally be of the post-tensioned, concrete box girder type, constructed insitu or precast. Construction will start from the middle of the proposed alignment, working out in both directions simultaneously. Launching gantries will be used to place viaduct segments. Most of the viaducts would be built between 5m to 16m high.

The alignment is on embankment between Ch34+400 and Ch34+650 which will involve placing up to 9m of fill onto approximately 5m of soil fill alluvial deposits. A high strength geotextile and/or toe berm is required to prevent base failure in this area.

Techniques will be employed to stabilise the slopes and subgrade at the Dills Corner Camp to Chau Tau section. These will include soil nailing, deep cut-off drains, side cut-off drains and the use of drainage underblanklets.

e. Number of Types of Designated Projects

The proposed project is a Designated Project as defined under Category A2, Part 1, Schedule 2 of the Environmental Impact Assessment Ordinance.

f. Name and Telephone Number of Contact Person

B. OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME

a. Planning and Implementation

The whole project will be planned and implemented by KCRC in-house departments together with external consultants. Construction will be carried out by contractors.

b. Project Programme

A PPFS has been carried out which outlines details for the Spurline Project. This included a detailed twelve week Environmental Assessment Report for which an intensive ecological survey was carried out.

The current fast track programme identified by the PPFS anticipates that consultants would commence detailed design in 1999 for completion by the end of 2000. Main construction works will begin in January 2001 with completion targeted for March 2004. Trial operation will commence immediately following the completion of construction. It is scheduled that the Spur Line would be in operation by mid 2004.

c. Project Interfaces

As the Spur Line will be constructed on viaducts for most of the length from Sheung Shui to Lok Ma Chau, the Spur Line will not have a significant effect on the existing drainage regime in the area. Potential projects interfacing with the Spur Line are tabulated as follows:-

PAP / Project / Contract No.		**Tentative Start Date**	**Tentative Completion**
	Major Flood Control Projects		
31CD	Shenzhen River Regulation Project Stage 2 Phase 2	mid 97	late 2000
35CD	Village Flood Protection Works for San Tin	late 96	mid 99
	Village Flood Protection Works for Chau Tau	mid 97	mid 99
53CD	Indus River Training Stage 1	late 98	early 2001
	Indus River Training Stage 2	early 99	early 2001
64CD	Rural Drainage Rehabilitation Scheme Stage 1 Phase 1B	April 98	April 2001
73CD	Eastern Main Drainage Channels for San Tin	mid 2000	mid 2003
87CL	River Training in Area 30B, Sheung Shui	early 98	early 2001
90CD	Shenzhen River Regulation Project Stage 3	mid 2001	late 2004
	Trunk Sewerage		
4203DS	North District Sewerage		
	Fanling Sheung Shui Sewer Modification	early 99	mid 2001
	Western Trunk Sewer	early 99	mid 2002
-	Trunk Sewer Network for NWNT	-	2007
	Ngau Tam Mei / San Tin Trunk Sewer		
	Highways Project		
6712TH/B	New Road from Man Kam Road to NT Circular Road and Boundary Crossing Facilities Expansion	early 2003	mid 2006

C. POSSIBLE IMPACT ON THE ENVIRONMENT

a. Outline of Process Involved

General

Provisionally, three temporary works areas have been earmarked at Lok Ma Chau, Kwu Tung (Dills Corner Camp) & environs and on the site of the existing Sheung Shui Temporary Housing Area.

Advance Works

Advance works to divert utilities will be required prior to the commencement of railway works. The existing large diameter water pipes running alongside the East Rail tracks near Sheung Shui Station will have to be diverted which has been agreed in principal with WSD.

Proposed Road Access and Road Works

The proposed Lok Ma Chau Station is within the Frontier Closed Area Boundary. A station access will be built, stemming from the Lok Ma Chau Road, crossing the Frontier Closed Area Boundary onto Ha Wan Tsuen Road and the Boundary Patrol Road, heading towards the proposed Lok Ma Chau Station. In addition, emergency access to the station is proposed to be built from the NT Circular Road, through the Vehicle Boundary Crossing (VBC), to and along the Boundary Patrol Road.

b. Potential Environmental Impacts : Construction Phase

Environmental impacts/issues	**Description of Impacts**
Gaseous emissions	Exhaust fumes from vehicles used in construction
Dust	Impacts from excavation, cutting, filling and stockpiles. Also associated with vehicle movement and general construction dust.
Odour	Removal of unsuitable material primarily only from water courses.
Noise	Construction noise impacts on dwellings in Kwu Tung, Lok Ma Chau, Chau Tau and Sheung Shui
Night time operations	Not applicable
Liquid effluents, discharges or contaminated runoff	Potential water contamination from oil runoff from vehicles and storage, sewage generated by construction workforce. Effluent generated from dewatering associated with piling activities is likely to be contaminated with silt and suspended solids and will require treatment before disposal/discharge.
Generation of waste or by-products	Construction waste products

Dangerous goods and hazardous waste	Site does not contain any potentially hazardous installations, dangerous goods storage areas or landfills. No hazards are foreseen.
Disposal of spoil or potentially contaminated material	A small quantity of contaminated mud may exist at previous industrial areas. This will require disposal at suitable sites. Inert excavated material, demolition and construction waste shall either be reused on site, taken to other reclamation site or to a public dump.
Disruption of water movement or bottom sediment	Tributaries of the River Beas may be affected, as will a number of fishponds
Visual impacts	Adverse landuse and visual impacts may result from construction if unmitigated.
Ecological impacts	Permanent loss of fishponds near Lok Ma Chau Station. Loss of wetland areas through viaduct section. No loss of habitat in at grade sections. Construction impacts on most habitats should be temporary and fragmented. Amphibians, reptiles, birds and mammals disturbed by noise, particularly near Lok Ma Chau.
Historical and Cultural impacts	No major items of cultural heritage value likely to be directly affected by the Spur Line.
Land Contamination	Some areas of potential contaminated land under the alignment of the track.

c. Potential Environmental Impacts : Operational Phase

Environmental impacts/issues	**Description of Impacts**
Gaseous emissions	Trains will be electrically powered so gaseous impacts should be minimal. Positioning of ventilation and smoke extraction facilities should be carefully positioned. Some vehicular emissions from station feeder roads.
Dust	Vehicle exhausts
Noise	Operational rail noise will be significant. Road noise restricted to around stations and access roads
Night time operations	Primarily, no night-time train service after 23:00. If train services are required after 23:00 frequencies will be curtailed.
Liquid effluents, discharges or contaminated runoff	Oils and lubricants used on the track and deposited by passing trains. Cleaning agents, air conditioning discharge and sewage generated at stations. Pesticides used to keep the track clear.
Generation of waste or by-products	Municipal waste will be generated at stations and on trains, including litter, food stuffs, plastics, wood, office waste and cleaning materials.

Dangerous goods and hazardous waste	Chemical waste generated through routine maintenance of trains and track will include lubricants, paint, batteries, oil, acid and alkaline pesticides, coolants and solvents.
Accidents causing pollution or hazard	Fire precautions will be built into the design
Disruption of water movement or bottom sediment	Runoff from stations and tracks to nearby rivers will affect sedimentation in rivers and have an oil and grease component if not intercepted.
Visual impacts	The viaducts crossing Long Valley and towards Lok Ma Chau will have a major visual impact which will be mitigated in designs
Ecological impacts	Impacts will be similar to construction in terms of fragmentation of habitats and noise and overhead disturbance from trains. The severity of impacts will be dependent on type of habitat and species present

D. MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT

a. Existing and Planned Sensitive Receivers

Air and Noise Sensitive Receivers

Potential Sensitive Receivers have been identified. They include residences, commercial premises and schools in Sheung Shui, Ho Sheung Heung, Dills Corner Camp, Kwu Tung, Tit Hang, Chau Tau and Lok Ma Chau. Dust has the potential to impact vegetation along the whole alignment of the Spurline.

Ecology

Wildlife along the Spur Line and in the vicinity of Lok Ma Chau Station will be affected. For areas of ecological significance, please refer to figures 2 and 3. In addition, Lok Ma Chau Station falls within Buffer Zone 2 of the Ramsar Site and impacts several active fishponds.

Water Quality (see figures 4 to 8)

Potential Water Sensitive Receivers are located along the whole length of the Spur Line. Residents and wildlife are likely to be affected by water quality impacts in the River Beas and its tributaries along Long Valley, the River Sutlej, and at fishponds from Pak Shek Au and Chau Tau Tsuen to Lok Ma Chau. Suspended solids levels will be increased in water bodies and may lead to increased sedimentation effects. The ultimate downstream receiving water body will be Inner Deep Bay.

Landscape and Visual

Potential sensitive receivers are shown in figure 9.

Historic and Cultural Resources

There are no major historic and cultural resources in the vicinity of the alignment, however, this will need to be confirmed during the EIA

Future Planned Sensitive Receivers

Will be identified under the Study.

b. Major elements of the surrounding environment and existing and/or past landuses on site which might affect the area in which the project is located.

Within the Kwu Tung area there are several small industries such as car repair yards and storage areas. Close to Lok Ma Chau are container storage areas. Some of these land pockets may be contaminated. These past landuses may present constraints to the Spurline project.

E. ENVIRONMENTAL PROTECTION MEASURES

a. Measures to minimise environmental impacts

The following measures will be taken into account in the EIA Study of the project:

- pollution control technology
- waste management systems and practices
- potential for waste and wastewater minimisation
- acoustic barriers and insulation
- buffer zones and landscaping
- construction activities arranged in sequence to minimise cumulative impact
- site layout and building design
- retention and enhancement of natural environmental features
- control of construction work practices
- application of Chapter 9 of the Hong Kong Planning & Standards Guidelines
- application of the Deep Bay Guidelines for dredging, reclamation and drainage works.

Some of the major issues and potential mitigation measures are summarised in the following two tables.

Construction Phase

Potential Impact	**Proposed Mitigation Measures**
Air Quality	Dust suppression measures set out in the *Air Pollution Control (Construction Dust) Regulations*, will be adopted. These include: • on-site vehicle speed restrictions and wheel washing • careful handling and the containment or damping of dusty materials, and • Frequent watering or covering of exposed areas of ground and prompt site restoration. These measures will be used as general practice to all construction sites to ensure that potential dust emissions are controlled and impacts upon sensitive receivers minimised
Noise	General site practices to control noise impacts include: • noisy machinery placed away from sensitive receivers, • the use of silencers, mufflers and acoustic shields, • regular maintenance of plant and equipment, and • reduction in number of machines used at any one time.
Water Quality	Water impact mitigation measures should include: • appropriate drainage facilities to control site runoff, (silt and oil traps), • management on site to prevent debris and harmful materials from reaching drainage facilities of water bodies, and • the provision of adequate toilet facilities and proper disposal of sewage by a recognised waste disposal company.
Ecology	A 12 month ecological baseline will be necessary under the EIA Study to determine the value of habitats along the Spurline. Both on and off-site compensation is likely to be necessary for fishpond loss and the bisection of a Painted Snipe habitat.
Waste	Mitigation measures to control waste include: • general good housekeeping practices, • sorting and segregation of wastes for reuse and disposal, • observing the requirements of the disposal permits, and • meeting the requirements of the Waste Disposal Ordinance.
Landscape and Visual	Upon the completion of construction reinstatement of visually amenable features and revegetation shall commence. Boundary fences will be erected around construction sites before the commencement of works to reduce the potential visual impacts of the works, and to prevent tipping outside the site boundary.
Historic and Cultural Impacts	Further investigations will be conducted in the EIA to evaluate the potential of any buried archaeological resources along the alignment and proposed Lok Ma Chau Station site.

Land Contamination	Appropriate measures will be taken to remediate any contaminated land and safe site practices should prevent the exposure of workers to risks.
Environmental Monitoring and Audit	An Environmental Monitoring and Audit (EM&A) programme will be identified for all environmental impacts. This will identify any problems as they arise and speed up their resolution.

Operational Phase

Potential Impact	**Proposed Mitigation Measures**
Air Quality	No major impacts expected
Noise	Appropriate design of trackform, viaduct structure and noise barriers to limit noise and vibration. Limiting of train frequency and speed during night time operations.
Water Quality	Appropriate interceptor design for track and stations so that discharges meet standards.
Ecology	After 12 month ecological baseline study, assessment of most ecologically valuable habitats and restoration/enhancement or off site compensation.
Waste	Implementation of good housekeeping practices and observation of the requirements of the Waste Disposal Ordinance will prevent adverse impacts. Use of appropriate disposal routes.
Landscape and Visual	Landscaping and planting will be implemented to minimise visual impacts.
Historic and Cultural Impacts	No historic and cultural impacts are expected during operation. No mitigation measures will be required.
Land Contamination	No land contamination impacts are expected during operation. No mitigation measures will be required.

b. Potential Severity, Distribution and Duration of Key Environmental Impacts

Dust, noise, water quality, ecology, waste, landscape & visual impacts will last for the construction period tentatively from June 2000 to March 2004.

Air quality impacts would be most significant during earthworks and excavation activities. Noise impacts will be most severe during excavation, piling and concreting. Water quality impacts will be most noteworthy during excavation, drilling and marine piling. Ecological impacts are likely to be most severe during construction but this will be defined further during a 12 month ecological survey after which engineering mitigation can be incorporated into the design.

c. Further Implications

The Spur Line will help ease the congestion of the cross-boundary point at Lo Wu. A future Kwu Tung Station, possibly incorporating property development, may be built later that would foster the further development of Kwu Tung area. A new Station at Sheung Shui, possibly incorporating property development may be built as part of the extensions to West Rail to connect Kam Tin with Sheung Shui. This is envisaged as a shuttle service. This project will potentially create job opportunities and benefit the society at large. Public interest in the project is likely to be moderate.

F. USE OF PREVIOUSLY APPROVED EIA REPORTS

No previously approved EIA has been conducted on the proposed project, however an intensive twelve week Environmental Assessment report was prepared out and forms the basis of this Project Profile.

The EIA for the San Tin Drainage Channel adjacent to the Lok Ma Chau Station area will be consulted, particularly for ecology and water quality issues.

Legend

- KCRC SS-LMC Spur Line
- Lam Tsuen Country Park
- Mai Po Village SSSI
- Mai Po SSSI
- Boundary of Buffer Zone 1
- Boundary of Buffer Zone 2
- Boundary of Ramsar Site
- Boundary of Inner Deep Bay SSSI

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BINNIE MEINHARDT JOINT VENTURE

FILE REF

CAD FILE NO

JOB TITLE

SHEUNG SHUI-LOK MA CHAU SPUR LINE

FIGURE TITLE

Ecologically Sensitive Areas Around Study Area

SCALE	FIGURE NO
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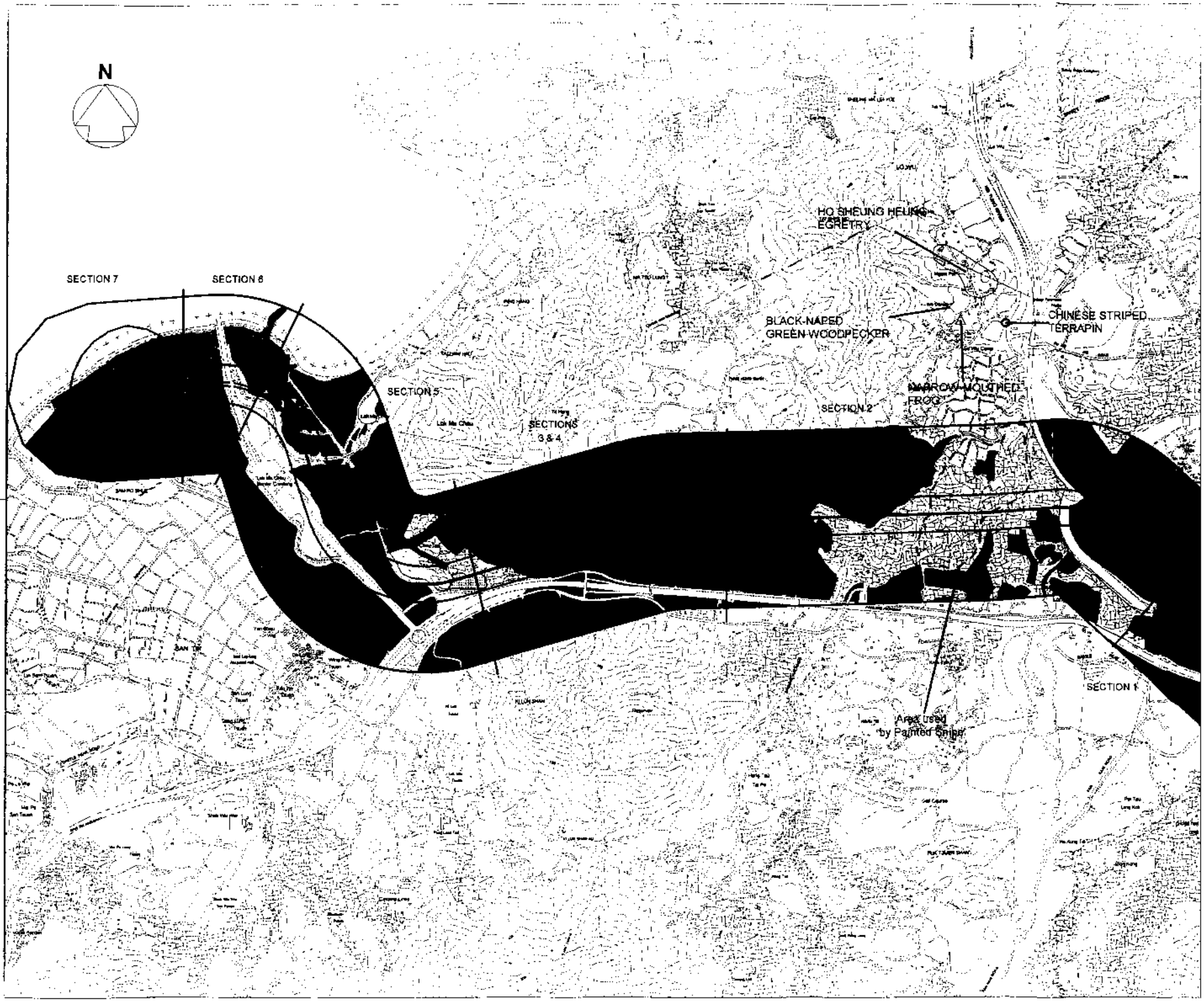

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BINNIE MENNHARDT JOINT VENTURE

FILE REF

CAD FILE NO

JOB TITLE

SHEUNG SHUI-LOK MA CHAU SPUR LINE

FIGURE TITLE

Broad Habitat Map
Within 500m of
Lok Ma Chau Spur Line

SCALE	FIGURE NO
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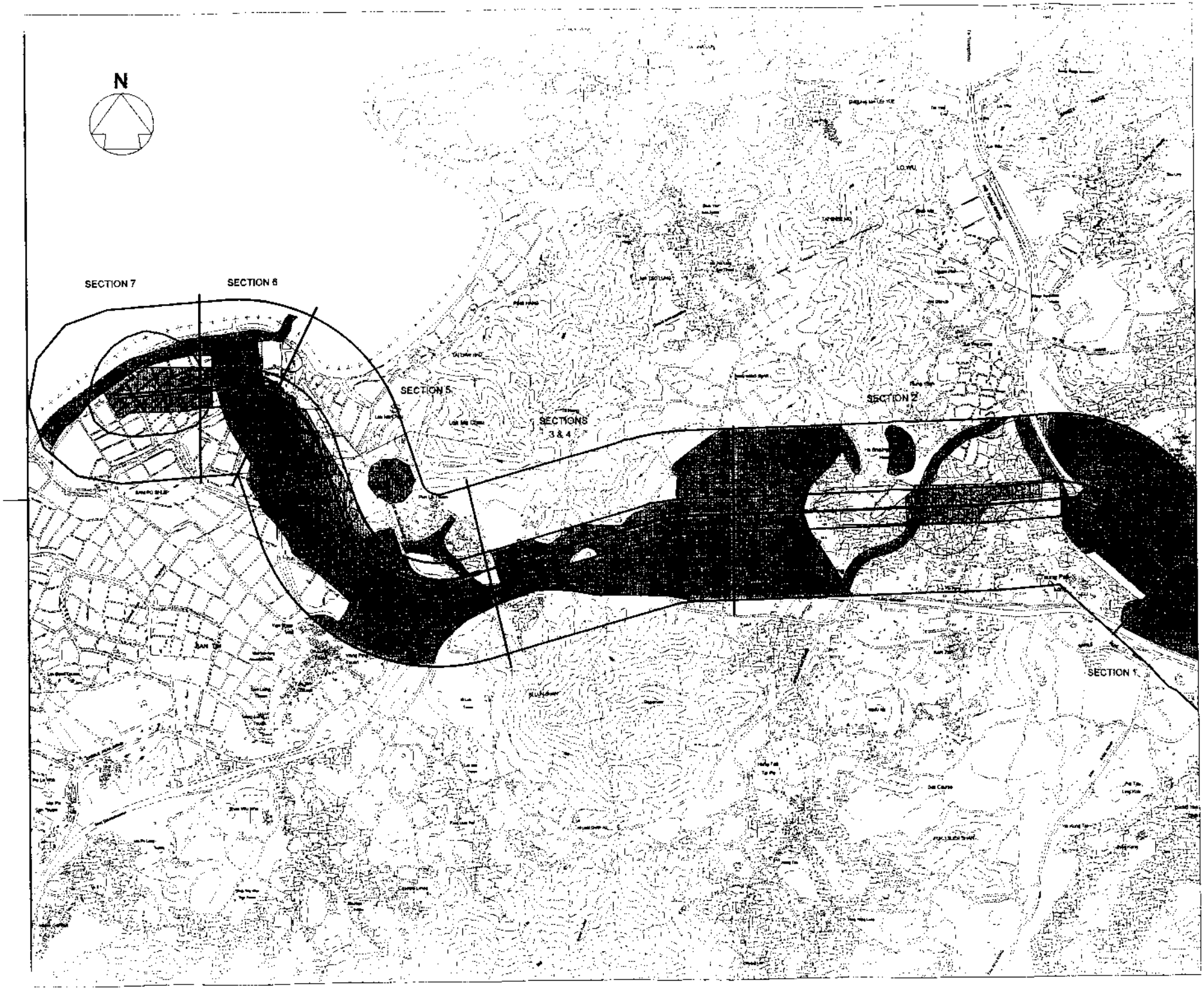
N
SECTION 7
SECTION 6
SECTION 5
SECTIONS 3 & 4
SECTION 2
SECTION 1
Legend
High Impact
Moderate Impact
Existing/Future Disturbance from Other Sources
100m Zone of Spur Line
500m Zone of Spur Line
KCRC SS-LMC Spur Line
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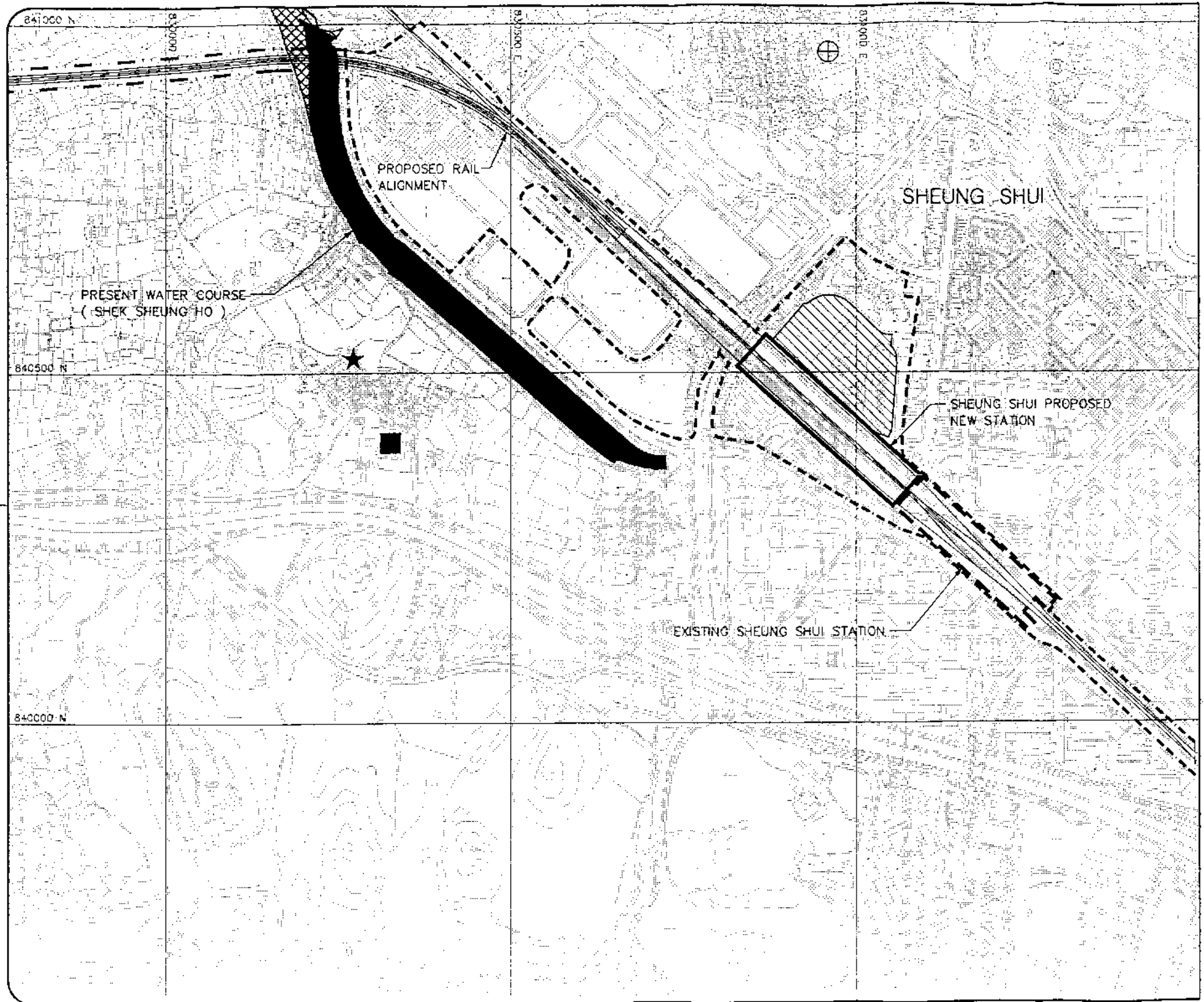
FILE REF
CAD FILE NO
JOB TITLE
SHEUNG SHUI-LOK MA CHAU SPUR LINE
FIGURE TITLE
Ecologically Impacted Areas
SCALE
1 : 20 000
FIGURE NO
3



Legend:

- ORIGINAL WALLED VILLAGE
- OLD WESTERN BUILDING
- CHINESE HOUSE
- CONTAMINATED LAND (INCLUDING CAR REPAIR YARDS / CONTAINER STORAGE etc.)
- PROPOSED FUTURE WATER COURSE

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FILE REF.

CAD FILE NO. 00070308.B04

JOB TITLE
SHEUNG SHUI-
LOK MA CHAU
SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS FOR THE SPUR LINE BASED ON WATER QUALITY, CONTAMINATED LAND AND CULTURAL CRITERIA (SHEET 1 OF 5)

SCALE	FIGURE NO.
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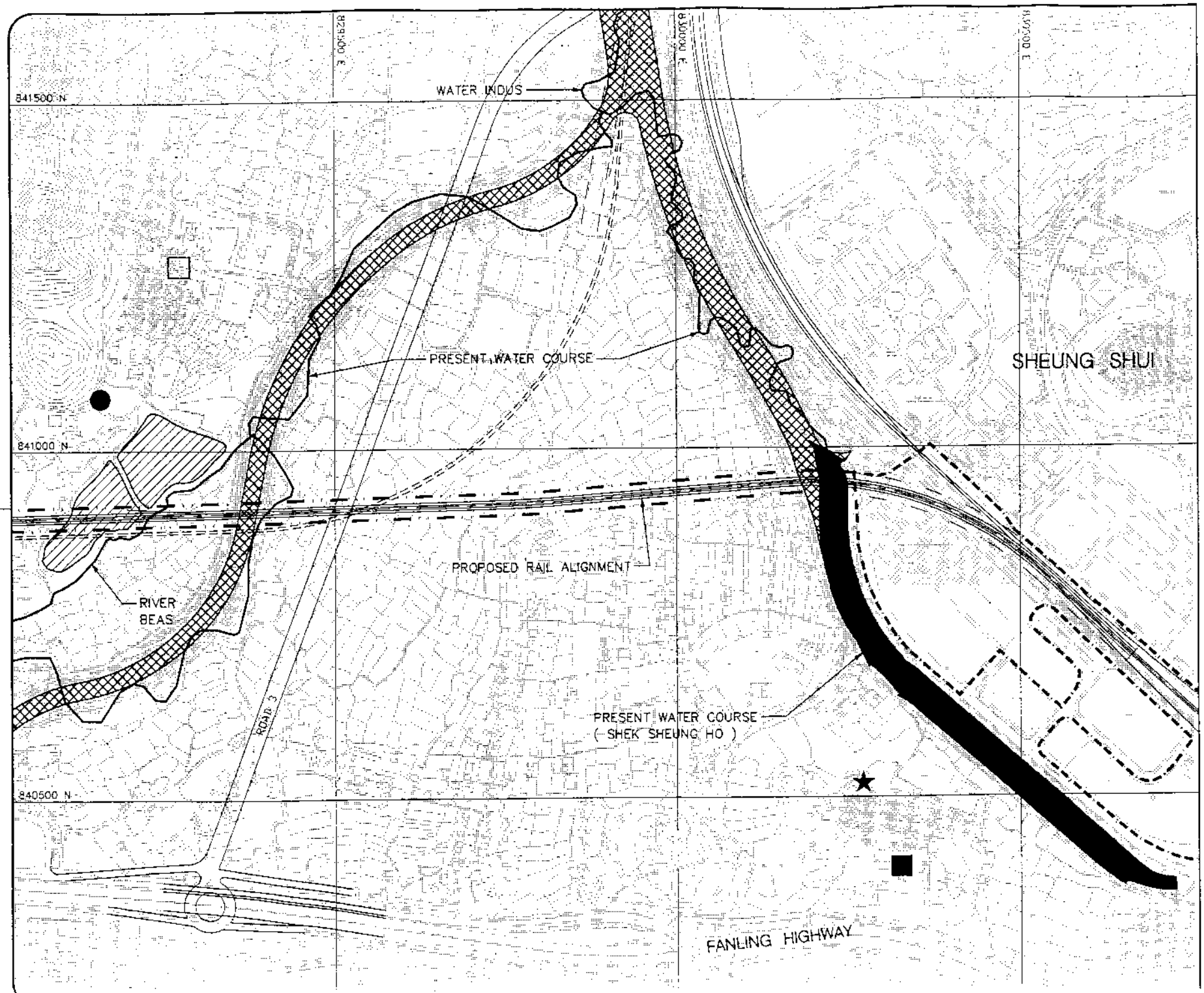

Legend:-

- ORIGINAL WALLED VILLAGE
- TEMPLE
- ANCESTRAL HALL
- CHINESE HOUSE
- FISH POND
- PROPOSED FUTURE WATER COURSES

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SINCLAIR KNIGHT MERZ VENTURE

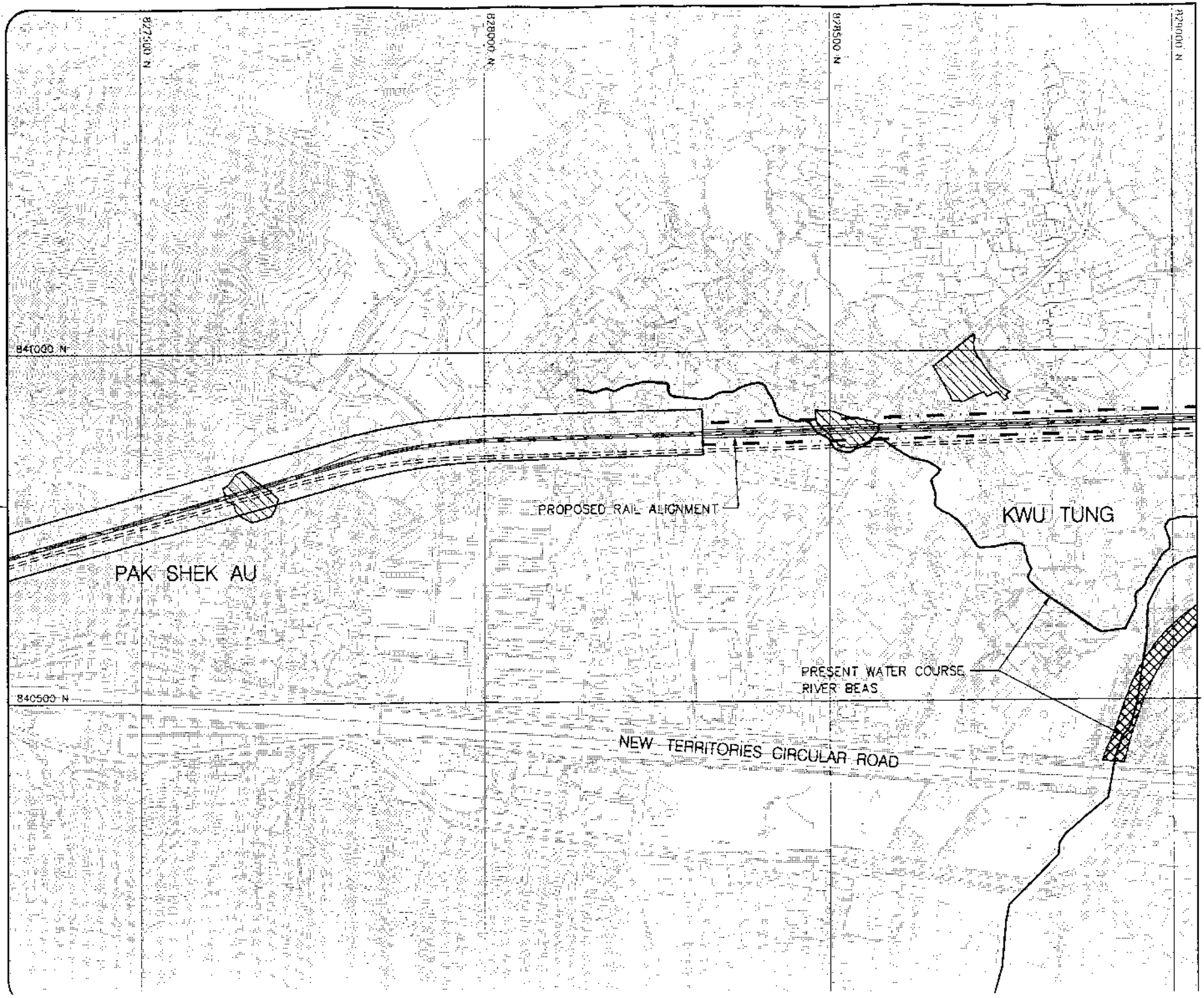
FILE REF.

CAD FILE NO. 00080308.904

JOB TITLE
SHEUNG SHUI-
LOK MA CHAU
SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS FOR THE SPUR LINE BASED ON WATER QUALITY, CONTAMINATED LAND AND CULTURAL CRITERIA
(SHEET 2 OF 5)

SCALE	FIGURE NO.
N.T.S.	5



Legend:

- CONTAMINATED LAND (INCLUDING CAR REPAIR YARDS / CONTAINER STORAGE etc.)
- PROPOSED FUTURE WATER COURSES

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ADVICE MECHANLEY JOINT VENTURE

FILE REF.

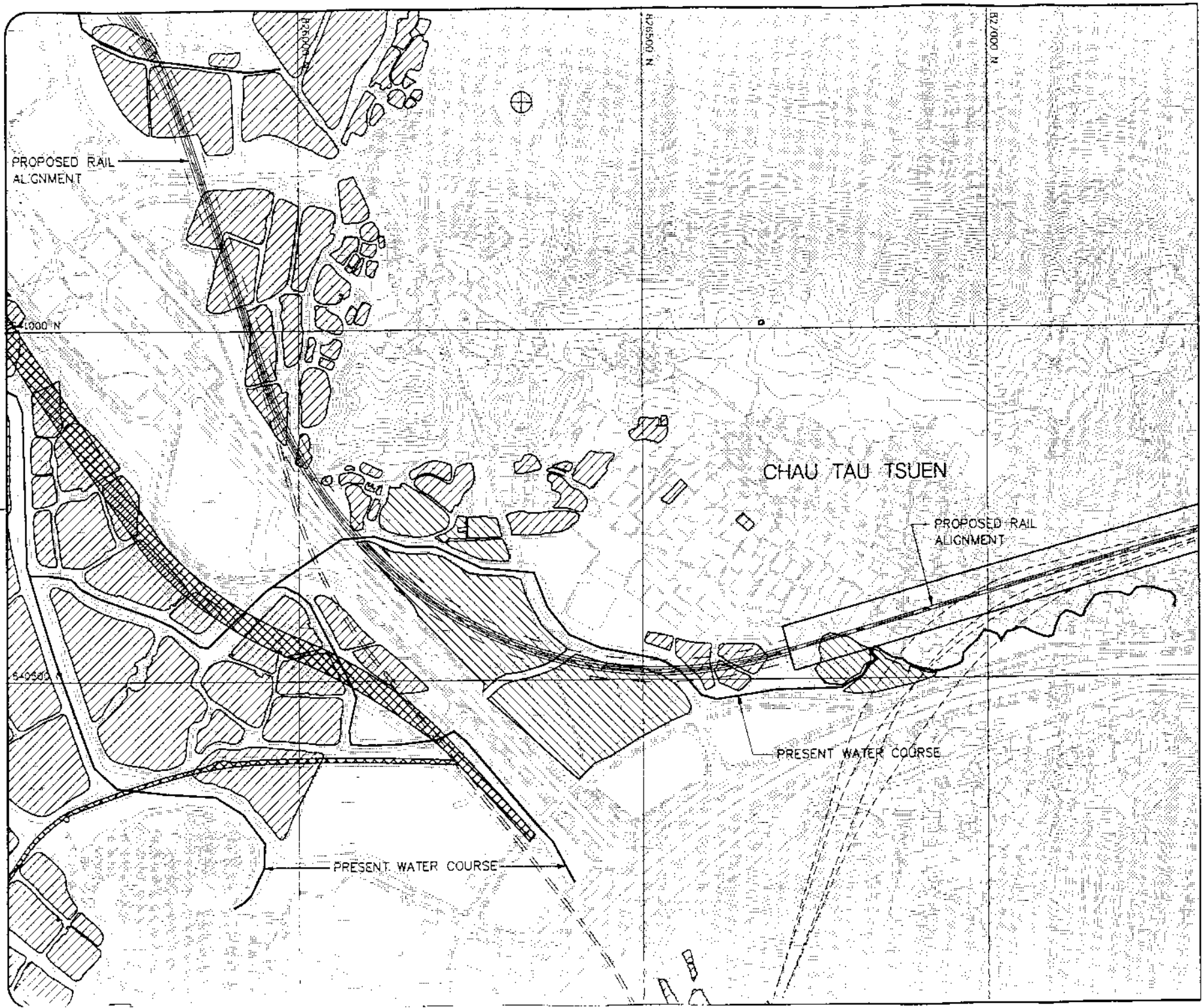
CAD FILE NO. 00090308.B04

JOB TITLE
SHEUNG SHUI-
LOK MA CHAU
SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS FOR THE SPUR LINE BASED ON WATER QUALITY, CONTAMINATED LAND AND CULTURAL CRITERIA
(SHEET 3 OF 5)

SCALE: N.T.S.

FIGURE NO.: 6



Legend:

- OLD WESTERN BUILDING
- CONTAMINATED LAND (INCLUDING CAR REPAIR YARDS / CONTAINER STORAGE etc.)
- FUTURE WATER COURSES (SAN TIN CHANNEL)
- FISH POND

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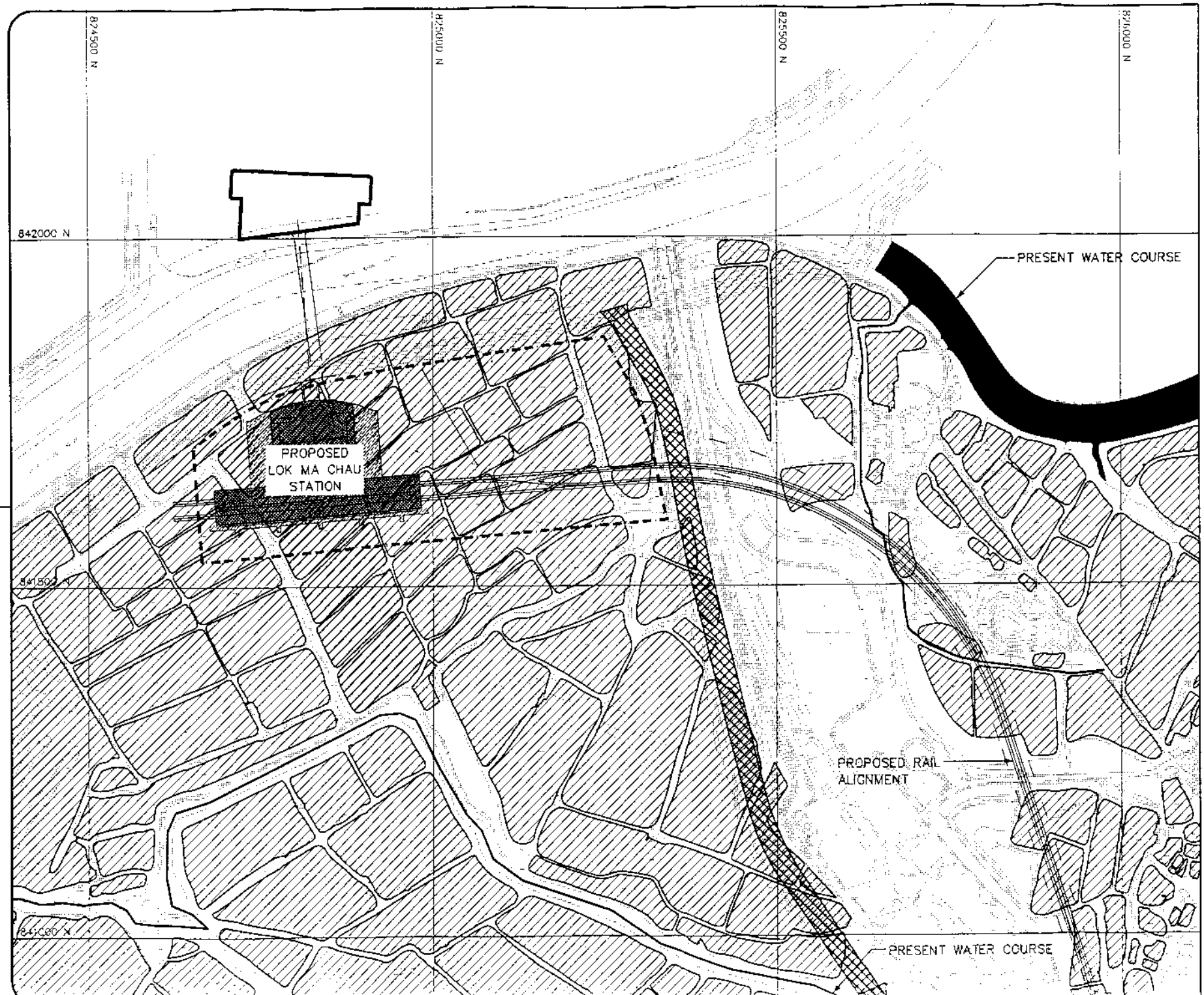
FILE REF.

CAD FILE NO. 001D0308.B04

JOB TITLE
SHEUNG SHUI-LOK MA CHAU SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS FOR THE SPUR LINE BASED ON WATER QUALITY, CONTAMINATED LAND AND CULTURAL CRITERIA (SHEET 4 OF 5)

SCALE	FIGURE NO.
N.T.S.	7



Legend:

- FUTURE WATER COURSES (SAN TIN CHANNEL)
- FISH POND

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ROUTE NEENSAREP JOINT VENTURE

FILE REF.

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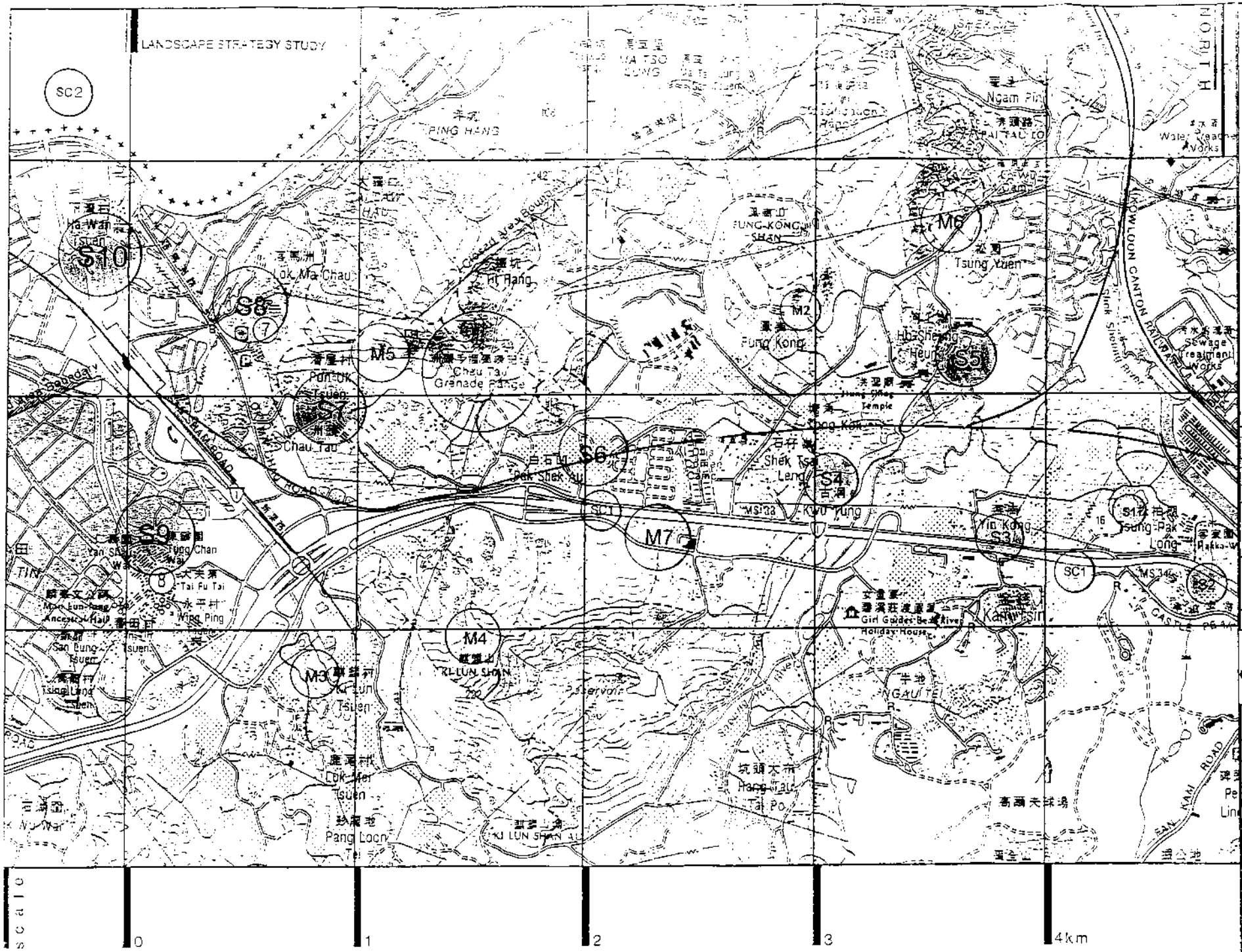
JOB TITLE
SHEUNG SHUI-
LOK MA CHAU
SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS FOR THE SPUR LINE BASED ON WATER QUALITY, CONTAMINATED LAND AND CULTURAL CRITERIA
(SHEET 5 OF 5)

SCALE: N.T.S.

FIGURE NO: 8



LEGEND

S - Significant Change
M - Moderate Change
SC - Slight Change

No.	Description	By	Date
	REVISIONS		

DRAWING STATUS

SIGNATURE

ISSUE DATE

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CAD FILE NO.

JOB TITLE
SHEUNG SHUI - LOK MA CHAU SPUR LINE

FIGURE TITLE
SENSITIVE RECEIVERS

SCALE
AS SHOWN

FIGURE NO.
9