

## PROJECT PROFILE

### BASIC INFORMATION

<p><b>Project Title</b></p> <p>RPIS Minor Rural Improvement Works Packages 1&amp;2, Improvement to the stream course at Pui O Project ID Code: IS-082</p>
<p><b>Purpose and nature of the project</b></p> <p>The objective of the project is 1) to strengthen and stabilise banks at key areas; and 2) to prevent erosion by deepening the channel and stabilising the banks.</p> <p>Bank stabilisation works will be carried out along the stream bank by installing gabions/reno mattresses. Boulders removed from the stream bed to deepen the channel will also be used.</p> <p>At present, the stream has been suffering from erosion, especially during the peak rainy season. Thus, this project proposes to provide erosion protection and a more well defined stream channel.</p>
<p><b>Name of Project Proponent</b></p> <p>Home Affairs Department Rural Planning and Improvement Strategy Section 4/F, Centre Point Commercial Building 181-185 Gloucester Road, Wanchai Hong Kong</p>
<p><b>Location and scale of project</b></p> <p>The location of the site is shown in Drawing 2, with details of the site boundary in Drawing 1. The site boundary encloses a stretch of stream approximately 630m long. Gabions and reno mattresses will be installed along the length of the stream. Where appropriate rock fill will be removed from the stream bed to form higher banks and deepen the channel. The construction details are shown on Drawing Nos. 90506/IS082/C/001, 002 and 003.</p>
<p><b>Number and Types of designated projects to be covered by the project profile</b></p> <p>1 project under section I.1 (b) of schedule 2, Environmental Impact Assessment Ordinance</p>

**Name and telephone number of contact person(s)**

**OUTLINE OF PLANNING AND IMPLEMENTATION PROGRAMME**

**How will the project be planned and implemented**

The Consultants (Mouchel Asia Limited) will design the project. The construction works will be planned and implemented by the Contractor.

**What is the project time table**

Construction is expected to commence in November 1998. The contract period will be 12 months, ending in November 1999. There will then be a 6 months maintenance period. The timing of the construction events will be dependent upon the Contractor's programme. However, an estimation of the duration of the construction activities is given below:

Initial survey	2 weeks
General Site Clearance	4 weeks
Method Statement Approval	2 weeks
Mobilization	1 week
Fabricate gabion mattress	10 weeks *
Earthworks	12 weeks *
Installation	8 weeks *
Landscaping works ( Hydroseeding )	8 weeks

\* All these procedures are to be done in parallel and the works will be carried out in the dry season between February and April. This will be specified in the Contract Document.

**Are there any interactions with broader programme requirements or other projects that shall be considered**

No.

## **MAJOR ELEMENTS OF THE SURROUNDING ENVIRONMENT**

### **Outline existing and planned sensitive receivers and sensitive parts of the natural environment which might be affected by the proposed project**

#### **Planning Areas:-**

The stream on which the project is based discharges into an estuary which is a designated Coastal Protection Area.

#### **Noise:-**

Noise sensitive receivers (NSRs) include approximately 12 individual houses, all within 100m of the project site. No houses are within 30m of the site. See Drawing 1.

#### **Dust:-**

Sensitive receivers as for noise above.

#### **Stream Water Quality:-**

The stream may be susceptible to construction pollutants which may enter the stream from the work site.

#### **Ecology:-**

The border of Lantau Country Park is within 1km of the project area. The trees located along the stream banks are considered to be valuable components of the landscape and important to the local ecosystem. The bank vegetation consists of patches of grasses, shrubs, climbing plants, herbs and mature trees. No trees will be felled but some climbing plants and grasses may require to be removed. Of particular concern is the stream bed ecology which may be sensitive to the rock filling and removal of bed rock from the stream bed. Sensitive receivers in the stream also include invertebrates such as the water skater and small group of fish populations. See the attached Annex A.

## **POSSIBLE IMPACTS ON THE ENVIRONMENT**

### **Outline any processes involved, including process flow diagrams, site plans, storage requirements and information on emissions and discharges**

The key processes involved will be the excavation and installation of gabions/reno mattresses along the stream banks. The gabion/reno mattress skeleton will be installed and filled with ballast rocks, obtained off site, to complete the structure. Surplus soil will be worked into the mattress to provide a medium for plant recolonisation. A works storage and preparation area will be required to assemble the gabions and store works materials. This will be contained within the site boundary. In addition, large boulders will be removed from stretches of the stream to deepen the channel and provide substrate for the bank stabilisation. See Drawings 90506/IS082/C/001 and 002 for the locations of works.

**Describe the environmental impacts or issues that arise during the construction, operation or decommissioning of the project, where applicable**

**During Construction**

**Coastal Protection Area:-**

The works will not directly impact upon the Coastal Protection Area. Indirect impacts from sediment transport downstream into the Area are anticipated to be small. (See water quality)

**Noise :-**

During construction, it is expected that an excavator will be used to form the banks, with trucks providing the fill materials. At all NSRs, noise levels are expected to be within the daytime construction noise guideline of 75 dB(A).

**Dust :-**

It is anticipated that unmitigated construction works could generate dust, if works are conducted during the dry season. Dust generation may, thus, pose a problem to air quality in the area and affect those sensitive receivers nearest the stream. It is not expected that there will be a significant dust impact on the nearest sensitive receivers because of their relative distance from the site.

**Stream Water Quality:-**

Localised bank and stream bed works may generate a quantity of suspended solids in the water column. The majority of suspended solids will mainly originate from bed works. As the bed sediments are mostly composed of coarse materials (gravels and sands) these will precipitate rapidly from the water column and, therefore, only travel a short distance down stream.

**Ecology:-**

There is a relatively high abundance of climbing plants and herbs in the study area, some of which will have to be removed during the works. However, due to the permeable nature of the gabion / reno mattresses, quick recolonisation of this rich marginal vegetation is expected. Trees and shrubs are not anticipated to be affected by the improvement work. Also, it is expected that while the algae population located on the stream bank could be adversely affected by the stream improvement works, however, its rate of recovery will be quick. However, recolonisation of the bankside vegetation cover will not precisely represent the existing communities. Overall, however, the ecological impact on vegetation will not be significant.

Due to seasonally high flows, the relatively small amounts of stream fauna that were noted during the site inspection should be well adapted to any short term disturbance created by the construction works.

Thus, while localised removal of boulders will result in some displacement of stream flora and fauna, only minor impacts on the stream bed ecology is expected. In addition, smaller rocks will be retained to provide habitats for recolonising benthos.

The stretch of stream to be improved is relatively small and of low-medium Nature Conservation Value (NCV). Thus, impacts on the habitats is considered to be of low-medium significance.

Land take during construction is an important consideration. The area of land used should be kept to a minimum. The Contractor will only be permitted to use land within the site boundary for any works.

### **During Operation**

No major or significant impacts are expected in this phase.

## **ENVIRONMENTAL PROTECTION MEASURES TO BE INCORPORATED**

### **Describe measures to minimise environmental impacts**

#### **Noise:-**

Noise mitigation measures are not considered as being required during this project. However, procedures for dealing with any complaints should be put in place.

#### **Dust :-**

In order to keep dust levels to a minimum exposed areas of soil and stockpiled areas shall be kept wet. Such a requirement for dust suppression methods will be included within the Contract Documents.

#### **Stream Water Quality:-**

Reforming of the stream banks should be conducted in such a way as to reduce the amount of extracted material accidentally entering the water course. This requirement will be included within the Contract Documents.

#### **Ecology:-**

Care should be taken to avoid damage to areas that do not require any work. Trees along the water course shall be preserved by sensitive gabion/reno mattress positioning. However, at the time of the field survey, no trees were observed inside the works area.

The stream bed will be left undisturbed except where removal of boulders is required for deepening the channel. All other works will be confined to the stream banks. Smaller rocks will be retained to maintain and provide habitats for benthos. Construction works should progress from downstream to upstream. Disturbed sediments will thus settle out on recently worked bed and ensure a more normal bed substrate composition for recolonisation. This requirement will be included within the Contract Documents.

The ability of the gabions to be colonised by bankside vegetation after construction can be enhanced by brushing topsoil won from the bank reforming operations into the surface of the completed gabions, so providing a suitable substrate for plant recolonisation.

Requirements for mitigation works will be written into the Contract Document in accordance with the requirements of the Environmental Guidance Notes for RPIS Minor Projects (EPD 1997)

**Comment on the possible severity, distribution and duration of environmental effects**

Assuming that all works are carried out in connected stages, excavation works will take approximately 2 months to complete. With proper site practices, impacts from suspended solids on water quality and ecology are not predicted to be severe or widespread.

Bank excavation and strengthening works will take a further 4 months to complete. The loss of the bankside vegetation is considered to be of moderate severity. However, application of the recommended mitigation measures should result in the banks recovering to approximately existing conditions in two to three years.

Loss of habitat and disturbance to the stream bed ecology is expected due to the removal of large boulder. However, smaller rocks are to be retained in order to provide habitats for recolonising benthos. The overall freshwater fauna abundance and diversity was noted as being relatively low and, therefore, the impact on the stream ecology is considered to be of low-medium significance.

Influx of suspended solids into the stream from bank excavation works is unlikely to be severe or widespread and will be of short intermittent duration provided that proper site practices are followed.

**Comment on any further implications**

This Project has been previously assessed by EPD and considered that no EIA was required.

## **ANNEX A**

### **RPIS Minor Rural Improvement Works Package 1&2 IS-082**

#### **General Information on Field Survey on IS-082**

The checklist is attached for your review and some supplementary comments on the water quality, flora and fauna present at this site are given below.

#### ***Water Quality***

At the time of the site inspection, river water clarity was observed to be generally good with the flow of the river moderate downstream but faster in the upper stretches. No refuse was found floating in the river or submerged in the river bed and there was no sign of pollution.

#### ***Flora***

The stream river bank is generally well vegetated with herbs and patches of grasses, shrubs, climbing plants and some mature trees, although some stretches have rocky boulder banks, with little vegetation. A good population of algae species was found covering the rocky river bed and some areas of the river bank and some emergent flora were recorded. The few trees located along the river bank are expected to be outside the works area and should not be affected.

#### ***Fauna***

Several species of butterflies including *Pieris canidia*, *Eurema hecabe* and *Delias aglaja* were recorded, together with two species of dragonflies at and around the site area during the site inspection. However, a diverse and abundant population of dragonflies were noted in the adjacent abandoned farmland, which is approximately 10m away from the study area. Dragonfly species included *Orthetrum prunosum*, *Anax guttatus*, which are both common species found in Hong Kong.

Two species of fish were observed swimming at the river bank and it was noted that the river provided a good nursery areas for a large group of *Gerris spp.* (water skater). No amphibian, mammal, or reptile populations were recorded during the visit.

#### **Conclusion**

As a result of the field surveys conducted for this project, we can confirm that there are no rare flora habitats or species present in the area and the existing overall faunal habitat diversity is lower than expected. Thus it is considered that the improvement of the stream embankment will not have a significant ecological impact on the existing habitat.

## **Impact of construction work on flora and fauna**

### ***Flora***

Permeable gabion and Reno mattresses, will be the construction material and only trimming of the marginal plants will be resulted. There is relative high abundance of climbing plants and herbs in the study area. Due to the permeable nature of the gabion, quick recolonization of these rich marginal vegetation is expected. Trees and shrubs are not anticipated to be affected by the improvement work. Also, it is expected that the algae population located on the river bank could be adversely affected by the river improvement works, however, its rate of recovery will be quick. However, as the permeability of the gabion and lining mattress has been proved to encourage the growth of riverine plants and allow the recolonisation of the bankside vegetation cover provided with time and lack of disturbance, thus the ecological impact on vegetation will not be significant.

### ***Fauna***

The observed abundance and diversity of aquatic fauna is less than expected. Water Skater and the limited number of fish species could be adversely affected. However, the ecological impact on them will not be significant as they are not in high abundance and they are mobile and able to relocate in order to avoid short term disturbance.

Since aquatic fauna within this site is low in number and diversity, thus, the ecological impact on them will not be significant.

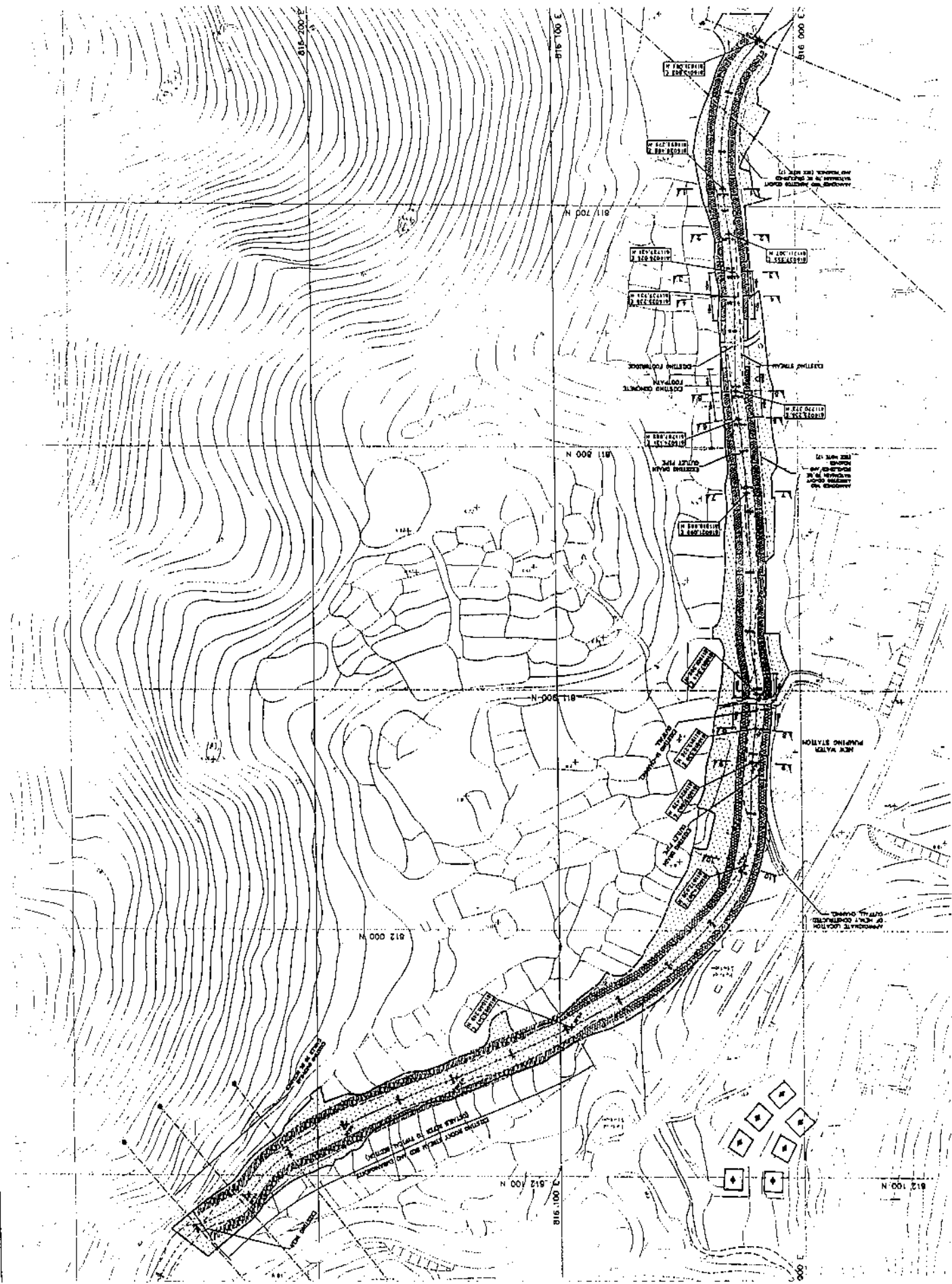
### ***Conclusion***

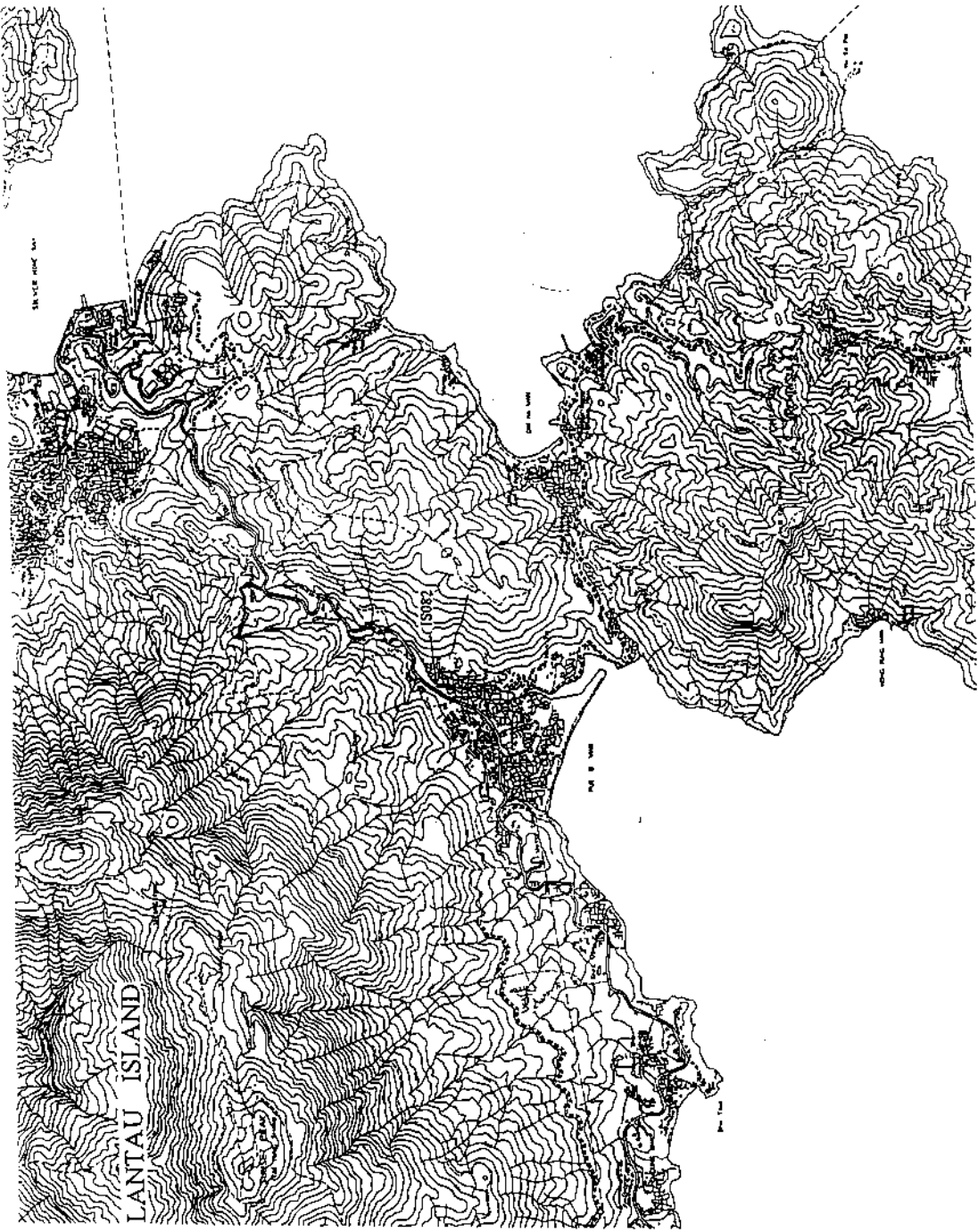
This stream is of low-medium nature conservation value and therefore, adverse ecological impact and water quality impact would be of low-medium significance.



◆ Noise Sensitive Receivers(NSR) within 100m

<b>Rural Planning &amp; Improvement Strategy</b> Home Affairs Department The Government of the Hong Kong Special Administrative Region	
<b>RPS MINOR RURAL IMPROVEMENT WORKS PACKAGE 1C</b>	
RP/03/099	ISUS2 IMPROVEMENT TO THE STREAM COURSE AT PU 0
SITE BOUNDARY	
<b>Mouchel</b> Mouchel Asia Limited Consulting Engineers	
DRAWING NO. 1	





Project Name	Rural Planning A Improvement Strategy
Client	Hong Kongs Department of Lands and Survey Special Administrative Region
Project No.	EPDS MINOR RURAL IMPROVEMENT WORKS PACKAGE 1C
Date	RP/03/06
Scale	1:5000
Sheet No.	IMPROVEMENT TO THE STREAM COURSE AT P.M. 0
Sheet Title	LOCATION PLAN
Consultant	<b>Mouchel</b> Mouchel Asia Limited Consulting Engineers
Drawing No.	DRAWING NO. 7

- NOTES:**
1. This drawing is a preliminary drawing.
  2. All dimensions are in meters unless otherwise stated.
  3. All areas are in square meters unless otherwise stated.
  4. The project is subject to the approval of the relevant authorities.
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**Rural Planning & Improvement Strategy**

Home Affairs Department  
 ABS The Government of the Hong Kong Special Administrative Region

**RPS MINOR RURAL IMPROVEMENT WORKS PACKAGE 1C**

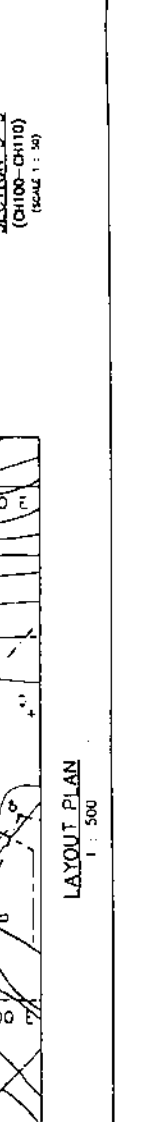
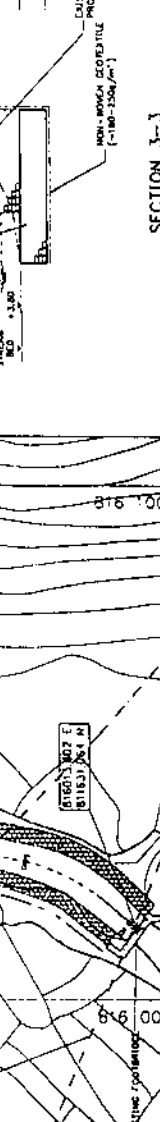
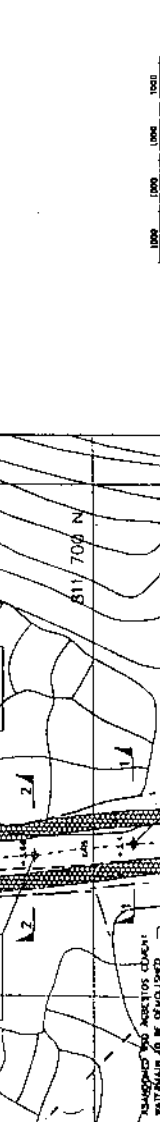
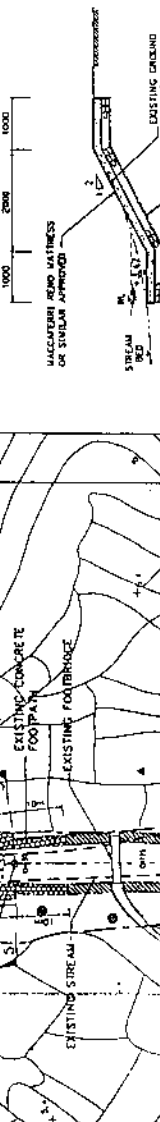
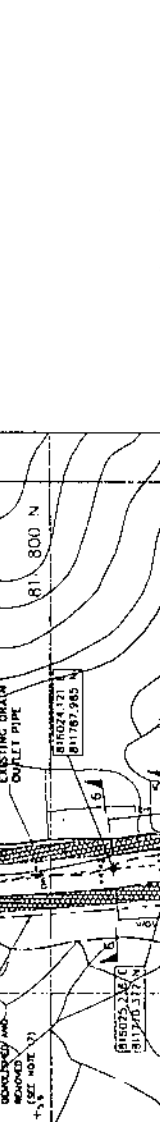
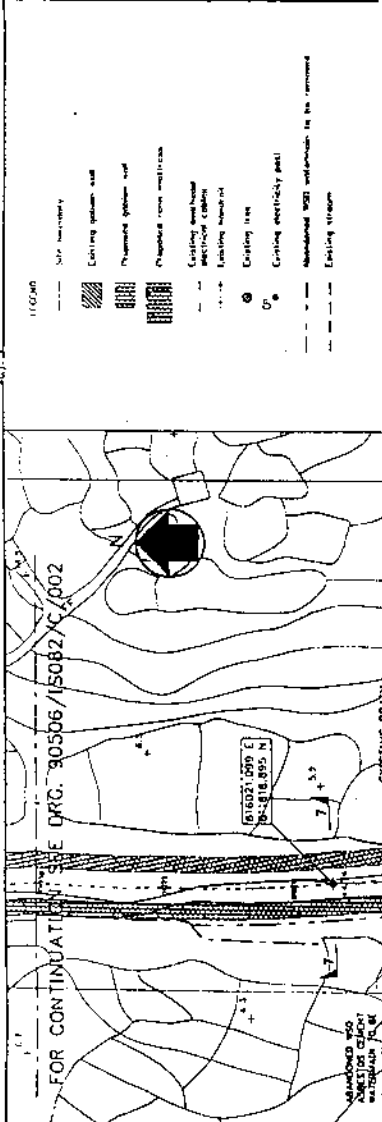
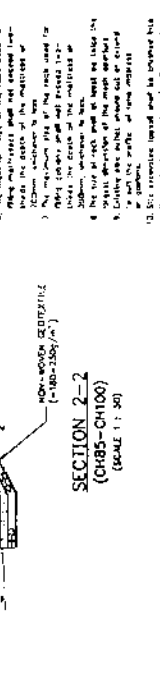
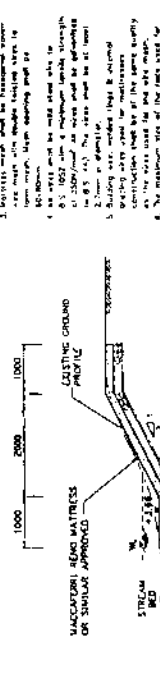
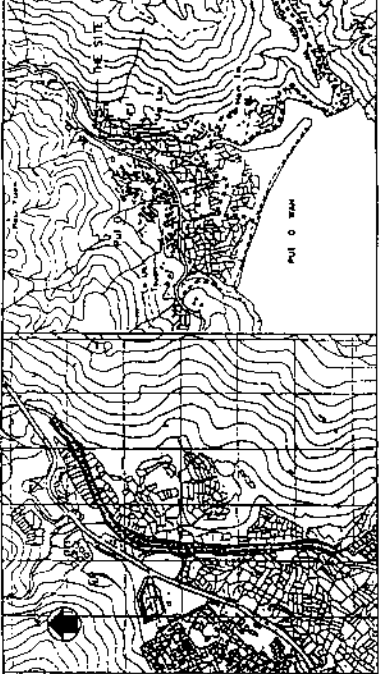
RP/03/06

IMPROVEMENT TO THE STREETS COURSE AT P.O.

LOCATION & LAYOUT PLAN (SHEET 1 OF 2)

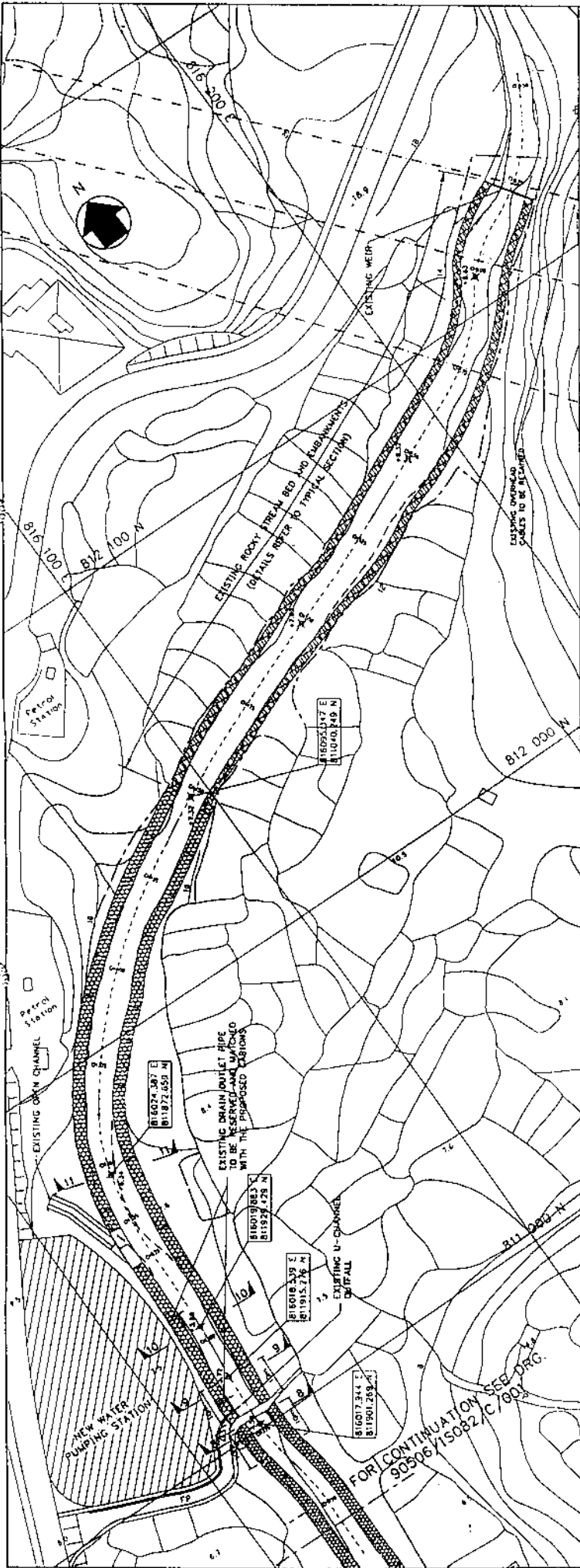
**Mouchel**  
 Mouchel Asia Limited  
 Consulting Engineers

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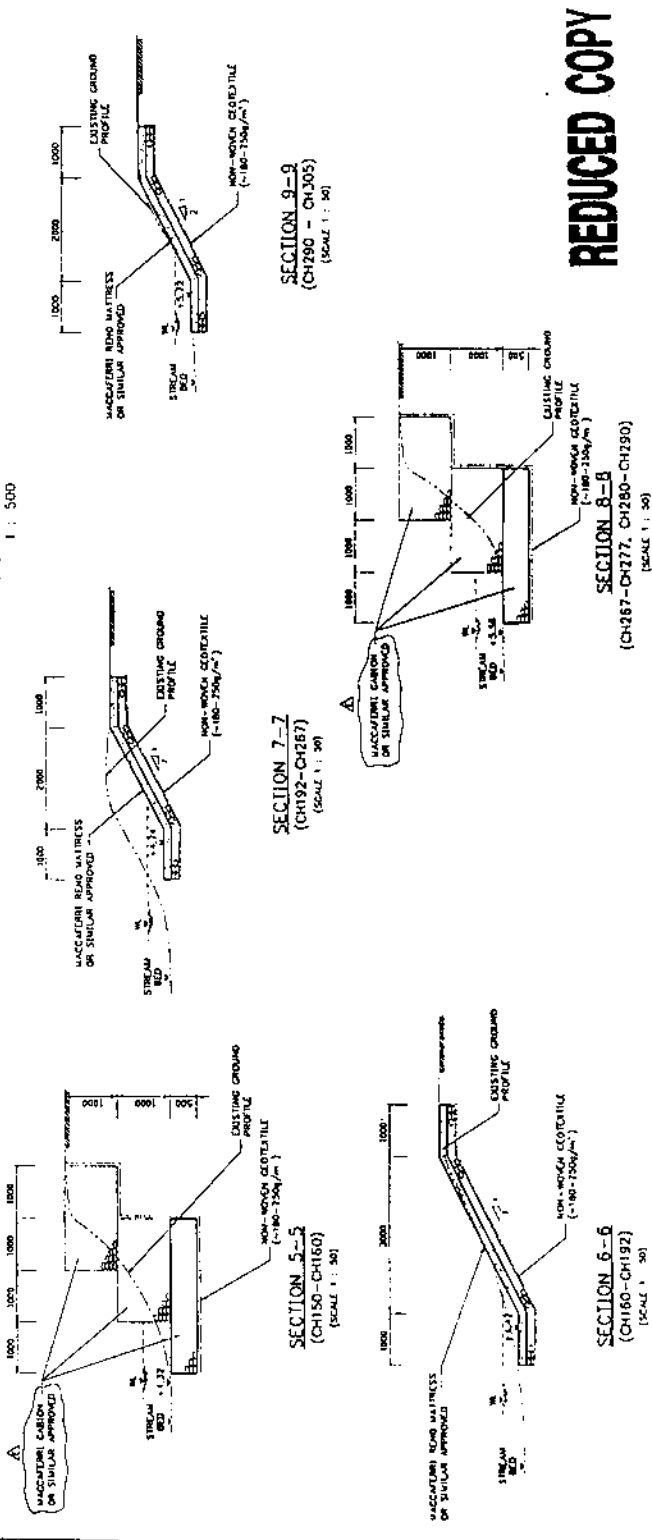


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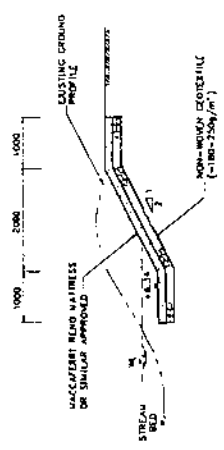
LAYOUT PLAN  
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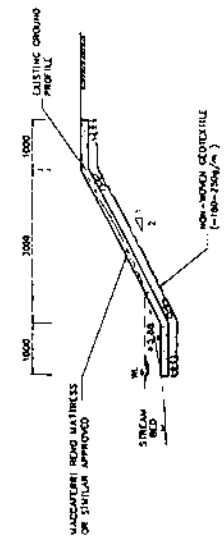
LAYOUT PLAN 1: 500



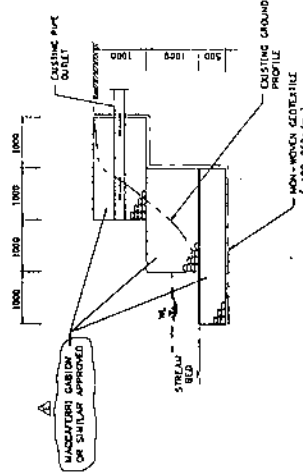
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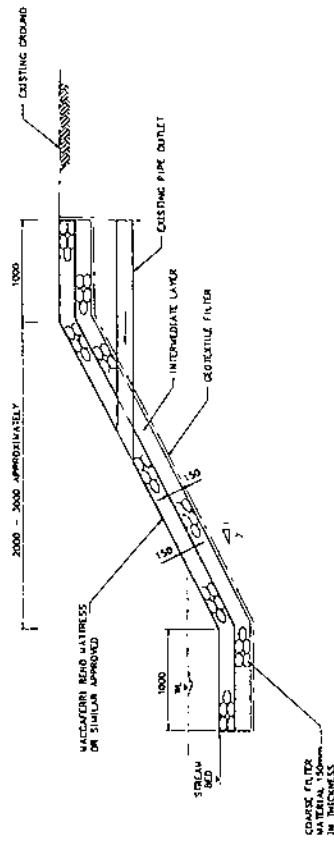
SECTION 11-11  
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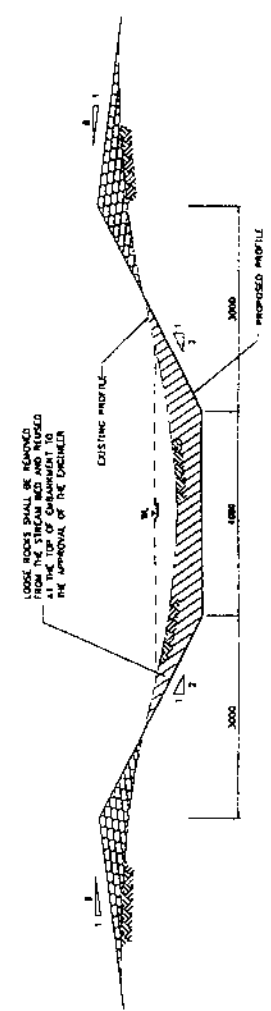
SECTION 10-10  
 (CH305 - CH347)  
 (SCALE 1 : 50)



TYPICAL GABIONS WITH EXISTING PIPE OUTLET  
 CROSS SECTION  
 (SCALE 1 : 30)



TYPICAL RENO MATTRESS LINING WITH EXISTING OUTLET PIPE  
 CROSS SECTION  
 (SCALE 1 : 20)



TYPICAL SECTION OF ROCKY STREAM BED  
 (SCALE 1 : 10)

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Rural Planning & Improvement Strategy

Home Affairs Department  
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RPS MINOR RURAL IMPROVEMENT WORKS PACKAGE 1C

RP/202/08

IMPROVEMENT TO STREAM COURSE AT P110

SECTIONS AND TYPICAL DETAILS

**Mouchel**  
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