

CHAPTER 17 RESETTLEMENT ACTION PLAN (RAP)

17.1 Legal and Policy Framework

Cambodia has experienced severe social, economic, and political turmoil during the last quarter century. Before the Khmer Rouge came to power in 1975, private land ownership was widespread and governed by *the Cambodia Civil Code of 1920*. Under the Khmer Rouge from 1975 to 1979 however, private property was abolished and all records were destroyed. After the said regime, the new government introduced usufruct rights to facilitate orderly occupation by people returning to urban areas, of vacant land and structures. However, all lands in Cambodia remained under the property of the state until private ownership on residential land of maximum 2,000 m² was restored in 1989. The current legislations governing land ownership is *the Land Laws of October 1992 and of August 2001*, which recognize claims to land made after the downfall of the Khmer Rouge in 1979. In this background, the fundamental system for “resettlement”, which are i) land management system, ii) policy and system for land acquisition, illegal occupation, and resettlement, and iii) methodology to fill up the gap between Development Partners’ (DPs’) policy on resettlement and the Cambodian laws and regulations related to resettlement, are still improving. Therefore, compromise between them is necessary in terms of dealing with resettlement issues caused by development projects.

17.1.1 Legal and Policy Framework in Cambodia

(1) Relevant Laws

(a) 1993 Constitution

The 1993 Constitution of Cambodia has established one governing principle in Article 44 pertaining to land acquisition.

Article 44 states that “All persons, individually or collectively, shall have the right to ownership. Only Khmer legal entities and citizens of Khmer nationality shall have the right to own land. Legal private ownership shall be protected by law. The right to confiscate properties from any persons shall be exercised only in the public interest as provided for under the law and shall require fair and just compensation in advance.”

(b) Land Law

The rights to land and property in Cambodia are governed by *the 2001 Land Law*, which are primarily based on the provisions of *the 1993 Constitution*. The law defines the scope of ownership of immovable properties, such as land, trees and fixed structures.

The Land Law, **Article 5**, states that “No person may be deprived of his ownership, unless it is in the public interest. Any ownership deprivation shall be carried out in accordance with the governing procedures provided by law and regulations, and after the payment of fair and just compensation in advance.”

Other provisions of the Land Law that are relevant to land acquisition, compensation and resettlement include:

- Only legal possession as provided by law can be transformed to land ownership. (**Article 6**)
- Any regime of ownership of immovable property prior to 1979 shall not be recognized. (**Article 7**)
- **Article 15** states that “*the following properties are included as public properties of state and public legal entities: a) any property that has a natural origin, such as forests, courses and banks of navigable and floatable rivers or natural lakes and seashores; b) that is made available for public use such as quays of harbors, port, railways, railways station and airports; or, c) any property which is made available, either in its natural state or after development, for public use such as roads, tracks, oxcart ways, pathways, gardens or public parks and reserved lands.*”
- **Article 18** states that “*the following are null and void and cannot be made legal in any form whatever: a) any entering into possession of public properties of State and public legal entities and any transformation of possession of private properties of State into ownership rights that was not pursuant to the legal formalities and procedures that have been stipulated prior to that time, irrespective of the date of creation of possession or transformation; e) any entering into possession of private properties of State, through any means, that occurs after this law comes into effect*”.
- **Article 19** states that “*any persons whose land title or factual circumstance fall within the scope of **article 18** of this law shall not have the right to claim compensation or reimbursement of expenses paid for the maintenance or management of immovable property that was illegally occupied. Any illegal and intentional or fraudulent acquisition of public properties of state or of public legal entities shall be penalized pursuant to article 259 of this law. The penalties shall be doubled where any occupation of public properties because damages or delay to works undertaken in the general interest, especially the occupation of roadway reversed land*”.
- Ownership of immovable properties described in **Article 25** is granted by the state to indigenous minorities¹ as collective ownership. This collective ownership includes all of the rights and protections as enjoyed by private owners. The exercise of collective ownership rights shall be subject to the responsibility of the traditional authorities and decision-making mechanisms of the indigenous community, according to their customs and subject to the laws of general enforcement related to immovable property such as *the law on environmental protection*. (**Article 26**)
- Persons with legally valid possession of land for five years (at the time the law came into effect) are allowed to be registered as the owner of the land (**Article 30**). Persons who (at the

¹ As per Article 23 of the Land Law, “*An indigenous community is a group of people that resides in Cambodia whose members manifest ethnic, social, cultural and economic unity and who practice a traditional lifestyle, and who cultivate the lands in their possession according to the customary rules of collective use.*”

time the law came into effect) held legal possession but had not yet completed the five years were allowed to remain in possession until they were eligible to be registered as the owner. **(Article 31)**

- Any beginning of occupation for possession shall cease when this law comes into effect (**article 29**). After this law comes into force, any new occupant with title to an immovable property belonging to the public bodies or private persons shall be considered as illegal occupant and shall be subject to the penalties provided in **Article 259** of this Law (**Articles 34**).
 - **Article 38** states that "*in order to transform into ownership of immovable property, the possession shall be unambiguous, non-violent, and notorious to the public, continuous and in good faith*".
 - Landless people may apply for land for residential and subsistence farming purposes at no cost, as part of a social land concessions scheme. The concessionaire may obtain ownership of this land after fulfilling conditions set out in a separate *Sub-Decree on Social Land Concessions*. (**Articles 50, 51**).
- (c) Expropriation Law Dec. February 2010 - procedures for acquiring private properties for national or public interest

Article 2: the law has the following purposes: (i) ensure reasonable and just deprivation of a legal right to ownership of private property; (ii) ensure payment of reasonable and just prior compensation; (iii) serve the public and national interests; and (iv) development of public physical infrastructure.

Article 7: Only the state may carry out an expropriation for use in the public and national interests.

Article 8: The state shall accept the purchase of the remaining part of the real property left over from an expropriation at a reasonable and just price at the request of the owner of land/or the holder of rights in the expropriated real property, if he is no longer able to live near the expropriated scheme or build a residence or conduct any business.

Article 16 states that "Prior to make any expropriation project proposal, the Expropriation Committee shall conduct a public survey by recording of a detailed description of all entitlements of the owners and/or of the holder of real right to immovable property and other properties subject to compensation as well as recording of all relevant issues.

In conducting the survey, the Expropriation Committee shall organize public consultations at the Capital, Municipal-Provincial, and District-Khan authority levels with Commune/Sangkat councils and Village or community representative to be affected by the expropriation to provide specific and concise information and collect inputs from all stakeholders regarding the proposed basic public infrastructure project.

In order to set a dateline for the expropriation or relocation or compensation, the Expropriation Committee shall conduct a dateline interview with all concerned parties about

the issues of immovable property to be affected by the public physical infrastructure project. Within 30 (thirty) working days after the completion of the survey, the Expropriation Committee shall produce a report with recommendations and submits it to the Royal Government for approval.”

Article 22: Stipulates the amount of compensation to be paid to the owner of and/or holder of rights in the real property, which is based on the market value of the real property or the replacement cost as of the date of the issuance of the *Prakas* on the expropriation scheme. The market value or the replacement cost shall be determined by an independent commission or agent appointed by the expropriation committee.

(2) Other Relevant Regulations

The private ownership of land was re-established in 1989, and confirmed in *the 2001 Land Law (Article 4)*. Cambodians are able to register the land they occupy with the local Cadastral Administration Office, whereupon a certificate of land title is granted. Issuing land titles is a lengthy process and most offices have a major backlog of applications. People are given a receipt and until the official title deed is issued, this receipt is accepted as a proof of real occupant of the land for land purpose or sale.

The present legal status of land use in Cambodia can be classified as follows:

- (i) **Privately owned land with title:** The owner has official title to land, and both owner and the Cadastral Administration Office have a copy of the deed.
- (ii) **Privately owned land without title:** The owner has made an application for title to land, and is waiting for the issuance of a title deed. The Cadastral Administration Office recognizes the owner.
- (iii) **Land use rights certified by the Government:** In this case, a receipt for long-term land use has been issued. This land use right is recognized by the Cadastral Administration Office.
- (iv) **Lease land:** The Government or private owners lease the land, usually for a short period. There is provision for the owner to reclaim land if it is needed for development.
- (v) **Non-legal occupation:** The user has no land use rights to State land that he occupies or uses. The Cadastral Administration Office does not recognize the use of this land.

Sub-Decree on Social Land Concession, March 2003 - provides for allocations of free private state land to landless people of residential or family farming, including the replacement of land lost in the context of involuntary resettlement.

Prakas No.6, entitled “*Measures to Crack Down on Anarchic Land Grabbing and Encroachments*”, sets ROW for road and railway. In support of this *Prakas*, MEF on 6 April 2000 issued *Decree No.961* prohibiting compensation for structures and other assets located in the ROWs. Some Road dimensions are modified by *the Sub-decree No.197* adopted on 23

November 2009 on to Management of ROW along the national road and railway in Cambodia.

Table 17.1-1 Road and Railways ROW Dimensions

Road Category	ROW Dimensions under Prakas No.06	ROW Dimensions under Sub-decree No.197
NR-1, 4, and 5	30 m from the centreline	30 m from the centreline
Other 1-digit NRs	25 m from the centreline	30 m from the centreline
2-digit NRs	25 m from the centreline	25 m from the centreline
Provincial roads	20 m from the centreline	not specified
Commune roads	15 m from the centreline	not specified
Railway outside city, province and crowned place	30 m from the centreline	30 m from the centreline
Railways in forest area	100 m from the centreline	100 m from the centreline

Source: JICA Study Team

17.1.2 Policy Gap Analysis

Law and regulation framework on resettlement and land issues are still in the stage of development in Cambodia, and some implementation documents and institutions are not yet prepared completely, however, RGC understands such situation and DPs' safeguard policies, and considers supplemental measures and assistance in RAP on a case by case.

Thus, in terms of practical operation, there is not so much crucial gap between Cambodian country system and JICA Guidelines' concept and requirements (See Table 17.1-2). Some other discussing points which are not mentioned clearly or concretely in Cambodian country system are also considered based on JICA Guidelines, RAP, and other relevant documents to fulfill gaps.

Table 17.1-2 Verification of and Comparison between Cambodian System and JICA Guidelines for Environmental and Social Considerations (April 2010)

No.	Item	JICA Guidelines Policy	Law/Regulation in Cambodia (officially promulgated)	Actual Operation (Gap Filling Measures)
1	Support system for socially vulnerable groups	It is necessary to give appropriate consideration to vulnerable groups.	<i>Sub-Decree on Social Land Concession</i> provides allocations of free private state land to landless people of residential or family farming, including the replacement of land lost in the context of involuntary resettlement.	Income restoration program (IRP) and assistance (allowance) to vulnerable groups will be prepared.
2	Assistance to restore and improve living standards	Living standards and income opportunities, and production levels of project affected people should be improved or at least restored to pre-project levels.	The government has no clear policy or procedure to restore the livelihood of APs.	Income restoration program (IRP) will be prepared.
3	Enhancement	Appropriate participation	It is clearly declared in <i>the</i>	Stakeholder meetings and

No.	Item	JICA Guidelines Policy	Law/Regulation in Cambodia (officially promulgated)	Actual Operation (Gap Filling Measures)
	of public participation in planning and implementation of RAP	of affected people and their communities should be promoted in planning, implementation and monitoring of involuntary AHs and measures taken against the loss of their means of livelihood.	<i>Expropriation Law (Article 16)</i> that in conducting a survey of entitlements, public consultations shall be organized to provide specific and concise information and collect inputs from all stakeholders regarding the proposed basic public infrastructure project and that a dateline interview with all concerned parties shall be conducted.	interview of AHs shall be conducted at appropriate stages according to JICA Guidelines and <i>the Expropriation Law</i> .
4	Compensation for land acquisition with replacement cost	Prior compensation will be done with replacement cost, which means that compensation for lost assets must be made in full amount at replacement cost and at current market price.	The amount of compensation to be paid to the owner of and/or holder of real right to the immovable property shall be based on the market price or replacement cost as of the date of the issuance of the declaration on the expropriation project. (<i>the Expropriation Law (Article 22)</i>)	AHs will be compensated at replacement cost. The replacement cost will be calculated based on the detailed measurement survey just before implementing resettlement.
5	AHs residing in the Project affected area before cut-off date	People to be resettled involuntarily and those whose means of livelihood will be hindered or lost should be sufficiently compensated and supported by the project proponents in appropriate time.	Under <i>the Land Law 2001</i> , those who have occupied ROW or public property are not entitled to any compensation or social support.	Assistance to AHs who are residing in the Project affected area (including public state land) at the time of cut-off date will be prepared (Compensation for properties without land is compensated at replacement cost and resettlement site will be prepared for landless AHs).
6	Grievance redress mechanism	Grievance redress system must be formulated and must function appropriately.	Grievance redress system is stipulated in <i>the Expropriation Law</i> ; however, it has provisions to exclude public infrastructure projects.	Grievance redress system will be formulated.

Source: JICA Study Team

17.2 Project Resettlement Policy

17.2.1 Objectives

The objective of the Project Resettlement Policy is to ensure that AHs are not worse off because of the Project. The Project should provide an opportunity for the local population to derive benefits from it, and it should likewise serve as an occasion for the local population to participate in its planning and implementation, thereby engendering a sense of ownership over the same.

17.2.2 Key Principles

The key principles of the resettlement policy are as follows:

- (i) Involuntary resettlement and loss of means of livelihood are to be avoided when feasible by exploring all viable alternatives. When, after such an examination, avoidance is proved unfeasible, effective measures to minimize impact and to compensate for losses must be agreed upon with the people who will be affected.
- (ii) People who must be resettled involuntarily and people whose means of livelihood will be hindered or lost must be sufficiently compensated and supported by RGC in a timely manner. Prior compensation, at full replacement cost, must be provided as much as possible. RGC must make efforts to enable people affected by projects and to improve their standard of living, income opportunities, and production levels, or at least to restore these to pre-project levels. Measures to achieve this may include: providing land and monetary compensation for losses (to cover land and property losses), supporting means for an alternative sustainable livelihood, and providing the expenses necessary for the relocation and re-establishment of communities at resettlement sites.
- (iii) Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood. In addition, appropriate and accessible grievance mechanisms must be established for the affected people and their communities.
- (iv) Resettlement action plans must be prepared and made available to the public. In preparing a resettlement action plan, consultations must be held with the affected people and their communities based on sufficient information made available to them in advance. When consultations are held, explanations must be given in a form, manner, and language that are understandable to the affected people.

17.2.3 The Cut-off Date for Eligibility

For the project, the cut-off date coincides with the first day of the census of AHs and the IOL thereat was conducted. The cut-off date for the existing NR-5 and KCHN Bypass is on **1st**

January 2013, and for Odongk Bypass is on **11th April 2013**. This would mean that any land occupation or transfer, or structures to be built on affected land after the cut-off date will not be entitled to any compensation including the land use right.

The cut-off date was informed to AHs at stakeholder meetings before and after the cut-off dates at stakeholder meetings during RAP preparation stage. At those meetings, AHs were informed that all structures constructed after the cut-off date (IOL survey) will not be entitled for any compensation from the Project, and that all people have to stop constructing any new buildings in the delineated area. The information will be continuously disseminated to prevent further population influx.

17.2.4 Eligibility

Persons not covered in the census are not eligible for compensation and other entitlements, unless they can show proof that:

- (i) They have been inadvertently missed out during the census and the IOL and certified by local authorities; or
- (ii) They have lawfully acquired the affected assets following completion of the census and the IOL and prior to the conduct of the DMS.

Eligible AHs include anyone who, at the cut-off date of the Project, was located within the Project area or any of its component or subproject or part thereof, and would have their:

- (i) Standard of living adversely affected;
- (ii) Right, title or interest in any house, land (including residential, commercial, agricultural and for grazing), water resources, or any other movable or fixed assets acquired or possessed, in full or in part, temporarily or permanently by public sector acquisition; or
- (iii) Business, occupation, place of work or residence or habitat adversely affected by public sector intervention.

An AH refers to households and consists of all members residing under one roof and operating as a single economic unit, who are adversely affected by the Project. For resettlement purposes, Project AHs will be considered as members of the Project AHs including single person households.

17.2.5 Entitlements

The project entitlements were developed and presented as shown in Table 17.2-1 Entitlement Matrix. The entitlements adopted were guided by the applicable national laws and regulations and JICA Guidelines. The entitlements and assistance may be revised based on the actual status of impact, as necessary, in the updated version of this RAP.

Table 17.2-1 Entitlement Matrix

TYPE OF LOSS	ELIGIBLE PERSONS	ENTITLEMENTS	IMPLEMENTATION ISSUES
A. LOSS OF LAND			
OUTSIDE ROW (PRIVATE LAND)			
I. Loss of Land (all kinds); Either Partial or Entire Land is Lost	All Affected Households (AHs) with recognized proof of ownership whose land will be acquired (for the construction of bypass roads in Kampong Chhnang and Odongk).	AHs have two options: 1) Land replacement (land to land): Land replacement will be provided with similar land quality and productivity potential. 2) cash compensation at replacement cost.	<ul style="list-style-type: none"> AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. IRC will ensure payment of all compensation and allowances for which AHs are entitled to at least <u>30 days</u> prior to the scheduled start of civil works. IRC will support the AHs to separate or transform the affected land title certificate. Cost of the procedure will be borne by RGC.
INSIDE ROW (PUBLIC STATE LAND)			
I. Partial Loss of Residential and/or Commercial Land, in which the remaining land is STILL VIABLE for continued use	AHs with main house and/or small shop (independent/family-owned business)	<ul style="list-style-type: none"> AHs must be removed entirely from PRW and no cash compensation is available for affected land in ROW. No new permanent structures (i.e. structures on a foundation or wooden house larger than the affected one) are permitted to be constructed in the ROW. 	<ul style="list-style-type: none"> AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. IRC will ensure payment of all compensation and allowances for which AHs are entitled to at least <u>30 days</u> prior to the scheduled start of civil works. Remaining ROW is still public state land.
II. Entire Loss of Residential and/or Commercial Land, or the remaining land is NOT VIABLE² for continued use (Landless AHs)	AHs with main house and/or small shop (independent/family-owned business) and no more remaining land.	<ul style="list-style-type: none"> No cash compensation for affected land in ROW. The landless AHs have two options: 1) Self relocation: receive in lump sum \$3,000.00 per landless AH as cash assistance for buying a land plot and preparing other basic infrastructure, plus cash compensation for their affected assets. 2) Group relocation: a resettlement site (RS) nearby villages will provided by the government; A land plot per landless AH will be 7.0 m x 15.0 m = 105.00 m². Basic infrastructures such as 	<ul style="list-style-type: none"> AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. Each self relocate landless AHs will receive the cost for resettle by calculating in average from the Cost Estimate of each RS (see Subsection 17.9.3), plus cash compensation for their affected assets. The estimate cost in each site should be IRC will ensure payment of all compensation and allowances for which AHs are entitled to at least <u>30 days</u> prior to the scheduled start of civil works. IRC will ensure allocation of cash or replacement land with sufficient time (at least <u>90 days</u>) for AHs to rebuild and relocate completely

² The remaining unaffected portion cannot accommodate purpose of activity/structure covered within the affected section. The size of viable land will be discussed between IRC-WG and the AHs during the detailed measurement survey.

TYPE OF LOSS	ELIGIBLE PERSONS	ENTITLEMENTS	IMPLEMENTATION ISSUES
		<p>access roads, latrines, drainages, and pumping wells will be provided as part of resettlement development. Electricity connection will also be provided if available in the area. However, AHs will bear the security deposit for electricity consumption required by service provider because the deposit will be refunded to AHs once the consumption is terminated.</p> <ul style="list-style-type: none"> Land title for the land plot in the resettlement site with names of husband and wife will be provided to each household after five consecutive years of living on the land at no cost. 	<p>before the scheduled start of civil works.</p> <ul style="list-style-type: none"> IRC will support the AHs to acquire land title certificate after five consecutive years of AHs' living on the land. Cost of the procedure will be borne by RGC. Remaining ROW is still public state land.
<p>III. Loss of Productive Land Use ; Either Partial or Entire Land is Lost</p>	<p>All AHs occupying land or using land in the Provisional Road Width (PRW)</p>	<ul style="list-style-type: none"> No cash compensation is available for affected land in ROW. See also [C. LOSS OF CROPS AND TREES] 	<ul style="list-style-type: none"> AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. AHs will not be moved from the ROW outside the PRW without justifiable cause (i.e. unless or until the land is required by the government for road improvement purposes). Remaining ROW is still public state land.
B. LOSS OF STRUCTURES			
<p>I. Loss of Houses or Shop/Store; Either Partial or Entire Structure is Lost</p>	<p>All the AHs confirmed to be residing in, doing business or having right over resources within the project affected area during the conduct of IOL and census of AH (on Cut -off Date)</p>	<ul style="list-style-type: none"> Cash compensation at replacement cost without deduction for depreciation or salvageable materials (i.e. present cost of construction materials in the locality plus cost of labor). AHs are also entitled to have transport (moving) allowance (cf. Item E). 	<ul style="list-style-type: none"> AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. AHs to get cash compensation at least <u>30 days</u> ahead of civil works in the locality to allow the AHs sufficient time to gradually reorganize the house and/or shop, thereby avoiding any disruption in their livelihood. AHs must completely cut, move back or relocate their houses/structures to new site within <u>30 days</u> after receiving compensation. If the structure is found no longer viable for living, compensation will be paid for the entire structure and the AH will also be entitled to other allowances.

TYPE OF LOSS	ELIGIBLE PERSONS	ENTITLEMENTS	IMPLEMENTATION ISSUES
	Renters	Renters are entitled to get allowances as below: <ul style="list-style-type: none"> • Transportation (moving) allowance: USD 40 • Disruption allowance: A lump sum cash assistance of USD 45 • Rental allowance: equivalent to two months' rent of a similar building in the locality. • If AH belongs to any of the vulnerable group, see Item E. • Provision of information in finding alternate rental accommodation. 	<ul style="list-style-type: none"> • AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. • IRC will ensure payment of all allowances for which AHs are entitled to at least <u>30 days</u> prior to the scheduled start of civil works. • AHs that rent house and/or shop are entitled to a one time transport allowance only.
II. Other Structures (porch, extended eaves, spirit house, fence, etc.)	All the AHs confirmed to be residing in, doing business or having right over resources within the project affected area during the conduct of IOL and census of AH (Cut- off Date)	<ul style="list-style-type: none"> • Cash compensation at replacement cost without deduction for depreciation or salvageable materials (i.e. present cost of construction materials and labor in the locality). 	<ul style="list-style-type: none"> • AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. • IRC will ensure payment of all allowances for which AHs are entitled to at least <u>30 days</u> prior to the scheduled start of civil works.
C. LOSS OF CROPS AND TREES			
I. Loss of Crops	Owners of crops regardless of land tenure status	<ul style="list-style-type: none"> • To the extent possible, AHs will be allowed to harvest their annual and perennial crops prior to construction. • If crops cannot be harvested due to construction schedule, AHs are entitled to cash compensation for the affected crops at replacement cost. 	<ul style="list-style-type: none"> • Annual Crops – AHs will be given <u>90 days</u>' notice that the land on which their crops are planted will be used by the project and that they must harvest their crops before the civil work. • Remaining ROW is still public state land.
II. Loss of Fruit or Shade Trees	Owners of trees regardless of land tenure status	<ul style="list-style-type: none"> • Fruit trees will be compensated in cash at replacement cost. 	<ul style="list-style-type: none"> • AHs to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. • Remaining ROW is still public state land.
D. LOSS OF COMMON PROPERTY RESOURCES			
I. Partial or Entire Loss of Community and /or Public Assets	Affected communities or concerned government agencies who own the assets	<ul style="list-style-type: none"> • Replacement by similar structures and quality at the area identified in consultation with affected communities and relevant authorities. 	<ul style="list-style-type: none"> • Communities to be notified at least <u>90 days</u> in advance before the start of civil works in the locality of the actual date that the land will be acquired by the project. • Remaining ROW is still public state land.
E. ALLOWANCES AND ASSISTANCES			
I. Transport (moving) Allowance	AHs that relocate their house or house/shop	<ul style="list-style-type: none"> • Shops and stalls made of light and temporary materials: USD 5 to USD 10 (depending on 	<ul style="list-style-type: none"> • Owners of houses or houses/shops are entitled to a one time transport allowance only.

TYPE OF LOSS	ELIGIBLE PERSONS	ENTITLEMENTS	IMPLEMENTATION ISSUES
		the scale of the structures to be relocated) • Regular shops and houses moving to residual or adjacent areas: USD 40 • Regular shops and houses relocating within the same village outside of the ROW: USD 60 • Houses relocating in another village outside of the ROW: USD 70	• Remaining ROW is still public state land.
II. Severely Affected Households and/or Vulnerable AHs Allowance	Severely affected households ³ and Vulnerable AHs	• One time cash assistance equivalent to USD 100 per Severely Affected households and/or Vulnerable AHs. • See also [IV. Income Restoration Program (IRP)]	• As indicated above, relocating landless AHs are entitled to replacement land with title at no cost
III. Disruption Allowance	• Relocating AHs to residual or adjacent areas (whose house type 1A to 2G) with floor area is less than 60 m ² .	• One time cash assistance equivalent to USD 35.	• Allowance shall be paid at the same time with compensation.
	• Relocating AHs to residual or adjacent areas (whose house type 1A to 2G) with floor area is 60 m ² or more.	• One time cash assistance equivalent to USD100.	
	• Relocating AHs to residual or adjacent areas (whose house type from 2H or higher)	• One time cash assistance equivalent to USD150.	
	• Relocating AHs to a new village or resettlement site	• One time cash assistance equivalent to USD200.	
IV. Temporary loss of business income during relocation	Owners of shop who relocate their shop	• Lump sum cash assistance of USD50.	
V. Income Restoration Program (IRP)	Severely affected households and Vulnerable Ahs	• An IRP will be provided during resettlement implementation.	• In-kind assistance to strengthen or initiate income-generating activities will be provided after need assessment through consultation with eligible AHs. Forms of assistance may include, but are not limited to, agricultural extension assistance, technical and other assistance to develop

³ “Severely affected households” include but not limited to the AHs who will (i) lose 10% or more of their total productive land (income generating) and/or assets, and (ii) have to relocate due to the Project.

TYPE OF LOSS	ELIGIBLE PERSONS	ENTITLEMENTS	IMPLEMENTATION ISSUES
			existing or new income-generating activities and project-related employment. <ul style="list-style-type: none"> • Special attention to the needs of and opportunities for the vulnerable AHs.
F. TEMPORARY IMPACTS DUE TO ROAD CONSTRUCTION AND MAINTENANCE			
I. Affected assets during construction	Owners of assets	<ul style="list-style-type: none"> • Compensation for lost assets in cash at replacement cost, or • Compensation as leasing fee based on replacement cost, and temporarily affected land will be returned to original owner/occupant. 	<ul style="list-style-type: none"> • Contractor will be required by contract to pay these costs. • Construction and maintenance will be carried out so as to minimize damage. • Construction will be required by contract to stay within PRW.
II. Damage to fields and private or community infrastructure including bund walls, drains and channels, etc.	Owners or persons using the field	<ul style="list-style-type: none"> • Repair of damage or payment for repair of damage at replacement cost. 	<ul style="list-style-type: none"> • As part of the civil works contract, all access roads/driveways to properties adjacent to the road will be repaired or replaced including culverts and other facilities, to a condition equal to or better than at present. • The disruption period will be minimized as much as possible. • The contractor will repair the land back to its original condition before returning to the owners.

Source: JICA Study Team

17.3 Project Impacts

17.3.1 Methodology Used in Preparing the Resettlement Plan

The following sections describe the processes and methods employed in the survey on adverse social impacts for improving NR-5. The impact survey involved the conduct of IOL wherein all fixed assets (i.e., lands used for residence, commerce, agriculture, including ponds; dwelling units; stalls and shops; miscellaneous structures, such as fences, wells, trees with commercial value; etc.) located inside the PRW were identified, measured. The owners of those properties were identified, and their replacement values were also calculated. Likewise, the severity of impact on the affected assets and to the livelihood and productive capacity of AHs were determined. Photographs of the affected assets along with the AHs had also been taken. Also, information on the members of the AHs, sources of livelihood, income level, and ownership of productive assets had been gathered. The impacts survey and census of AHs were conducted in January-April 2013.

(1) Data Gathering Instrument

The basic tool used in the IOL and census of AHs was the survey questionnaire. Detailed socio-economic information on AHs whose main structures (i.e., houses and shops excluding

government buildings) will be partially or entirely affected was obtained with the use of the survey questionnaire in Khmer. The questionnaire covered concerns on socio-economic conditions of the AH, in addition to basic information on the household head, such as gender, age, educational attainment, and primary source of income. It also included the affected assets and income, and their perception on the Project (see *Appendix 17-4: Inventory of Loss and Socio-Economic Survey Questionnaire Form* for a copy of the impact survey questionnaire).

(2) Survey Team

In addition to the Study Team leader (resettlement specialist), a recruited team of 41 local research assistants including one field survey coordinator, 3 field supervisors, 18 enumerators, 15 local assistants, 3 data entry clerks, one data developer, and 4 replacement cost (market rates) researchers, including one field team leader, was organized to help prepare this RAP. Except for the data developer, the rest of the local research assistants were based in the field. The survey team is divided into 3 survey groups. Each IOL survey group included one supervisor, 6 enumerators, 5 local assistant (for measuring), one data entry clerk and local authorities. Field data gathering for NR-5 and KCHN commenced on 1st January 2013 and was completed on 12th February 2013, while for Odongk Bypass it was started from 17th to 26th April 2013. The research team was accompanied by commune or village officials during their data gathering activities.

(3) Setting of the Cut-off Date

The IOL and census of AHs were preceded by a series of public consultation meetings in commune centres along NR-5. Among others, the purpose of the public meetings was to brief the local population about the Project background, activities of the survey team, the policy of JICA and the Cambodian government on involuntary resettlement for the NR-5 Project, including the policy requirement on the cut-off date. The local people were informed that the cut-off date is the first day of holding the IOL and census of the AHs, which was on **1st January 2013 for the exiting NR-5 and KCHN Bypass** and on **11th April 2013 for Odongk Bypass**.

(4) Basic Unit Costs Used in the Resettlement Plan

In line with the IOL activities, an RCS of affected assets in the Project area was carried out by the research team which was led by a local resettlement/architecture specialist. The main objective of the RCS is to determine the rate of land prices based on actual transaction records of the affected areas, of affected main and secondary⁴ structures, and of fruit trees, trees and crops. Based on the results of RCS, the AHs will receive compensation at replacement cost (reflecting market price) from RGC for their loss of land and property due to the Project.

The methodology employed in the RCS included the following:

⁴ This includes fences, wells, pig pens, toilets, kitchens, etc.

- (i) **Sale/Market comparison method:** This method is based on data provided from recent sales of properties that are highly comparable to the subject property in the vicinity. The method is very useful for cost calculation of structure, land, crops and trees.
 - (ii) **Contingent valuation method:** Survey based on willingness to accept (WTA) and/or willingness to pay (WTP). This method was used for land price estimation because of land transactions at the project area are minimal in 2013.
 - (iii) **Income approach:** Sum of stream of incomes and sales proceeds. The principle here is that the value of a property is related to its ability to produce cash flow. The technique relies heavily on current market transactions involving the sale of comparable properties. This method was used for estimating the prices of crops and tree, particularly to calculate the compensation rates for temporary impact of agricultural land.
 - (iv) **Replace cost approach:** This method was useful for structure cost calculation. The value of a structure is based on the current cost for building the concerned structure and labor cost. For this study, the value of structure and labor cost are derived from the current cost based on market price without depreciation.
- (a) Unit Costs of Land

The affected private lands were divided into 5 main categories: rice field, orchard, flooded, residential and commercial lands. The way to obtain data on market rates is to gather data on recent land sales, however sale cost recording could not be found at/around the Project area. Therefore, data of recent sales were collected by direct interviews with (i) land owners at/around the Project area who are both AHs and non-AHs, and (ii) local authorities at/around the Project area. Per results of the RCS, the unit costs of land covered with recognized proofs of ownership, structures, crops, perennials, and timber trees in districts and communes traversed by the Project road are provided.

(b) Unit Costs of Structures

The houses/structures affected by the Project have been categorized into two main groups – house/dwelling and other structures. The methodology employed for costing house/structures were composed of quantity survey and detailed measurement of the component parts of each structure. Labour costs were also assessed at market prices for the structure as a whole based on the information provided by local building contractors at the survey areas.

Although there are 4 main standard categories, some subcategories were introduced based on actual materials in each category. As a result of the survey, a total of 24 categories were identified in the Project area. The unit prices of a typical structure for each category are provided.

Other structures such as wells and fences, and cultural assets such as stupa (Chedey), have to be compensated at their market price, and the results of the specific rates of structures are provided.

(c) Unit Costs of Crops and Trees

The primary data was collected through interviews on the income at which owners/cultivators of crops and trees at the Project area. The market rates of crops and trees have been calculated based on the yield and the period of maturity of trees and crops as determined from interviews with farmers along NR-5.

The formula used for fruit trees is as follows: (Number/Quantity of harvest per year) x (Market price) x (Number of years it will mature) + cost of seedling

In order to simplify the study, perennial trees that have a growth period of more than five years have been classified in to the following three types:

- ✓ Sapling tree (1-3 years), as it can replanted ; 1/3 of full price,
- ✓ Young tree (3-5 years), bearing some fruit ; 2/3 of full price,
- ✓ Mature tree (more than five years), fully bearing fruit ; compensate full price.

According to the survey, there are some trees that have a growth period of less than five years. Trees are also equivalent to full compensation cost if mature. Otherwise, their compensation value is their cost as a sapling tree or as a young tree.

17.3.2 Inventory of Affected Assets

(1) Land

The inventory of affected land (PRW: 20 m - 20 m) on both sides from the centerline of the road) in ROW (30 m - 30 m) of NR-5 was not performed since the ROW is public state land. It will not be compensated by the Project for the affected area (20 m - 20 m). Nevertheless, the survey team also determined the categories of the land occupants or users, and if the affected lands are accompanied with immovable assets such as trees, houses, shops and/or other structures. The landless households were also considered.

There were instances when the survey team could not complete their interviews with the AHs because the owners of the affected houses and shops were either closed or unattended during the survey. In such case, the survey team was only able to estimate the area of ROW lands used for residential or commercial purposes (i.e., footprint of the structures), and those that are fenced. These estimates will be validated and corrected as necessary during the updating of the RAP, with the assistance of commune officials who will also sit as members of the Provincial Resettlement Sub-committee-Working Group (PRSC-WG), the main resettlement body that is tasked to carry out the DMS.

A total of 609,483.50 m² of land will be required for the construction of the two bypasses (KCHN and Odongk). Of these, 95.04% (579,255.87 m²) is used for growing rice, 6,478.89 m² is used as orchard land, 4,716.56 m² is flooded land, 296.00 m² is commercial land and 18,736.18 m² is residential land. Table 17.3-1 shows the affected land area and the number of owners identified as AHs.

**Table 17.3-1 Number of Affected Households who will lose their Private Lands
(due to Kampong Chhnang and Odongk Bypasses)**

Province	District	Rice Field		Orchard		Flooded Area		Commercial		House Plot/ Home Garden	
		AH	m ²	AH	m ²	AH	m ²	AH	m ²	AH	m ²
KCHN	Rolea B'ier	561	422,557.96	1	1,269.00	5	2,040.96	1	296.00	18	7,284.39
	Kampong Tralach	77	110,402.96	1	379.14	0	0	0	0	10	90.00
KDL	Ponhea Leu	29	46,294.95	4	4,830.75	2	2,675.60	-	.	12	11,361.79
Total		667	579,255.87	6	6,478.89	7	4,716.56	1	296.00	40	18,736.18

Data source: Project Survey conducted in January-April 2013

(2) Main Structures

A total of 1,079 AHs along NR-5 and the two bypasses, whose main structures (house, house-shop and/or shop/restaurant) will be affected by the Project. Of the 1079 AHs, 1,060 AHs are residing along NR-5, and 19 AHs residing along the two bypasses.

Table 17.3-2 Number of Affected Households who will lose their Main Structures According to Type of Use

Road section	Province	District	AHs According to Type of Structure					Total
			House	House-Shop	Shop/Restaurant	Shelter	Other Structures	
NR-5	PST	Krakor	123	71	0	168	82	444
		Subtotal (PST)	123	71	0	168	82	444
	KCHN	Baribour	201	122	3	171	39	536
		Kampong Tralach	148	116	3	149	84	500
		Rolea B'ier	113	75	0	124	42	354
		Sameakki Mean Chey	41	12	1	33	21	108
		Subtotal (KCHN)	503	325	7	477	186	1,498
	KDL	Ponhea Leu	29	2	0	20	15	66
		Subtotal (KDL)	29	2	0	20	15	66
	Total (NR-5)			655	398	7	665	283
Bypass	KCHN	Kampong Tralach	1	0	0	0	0	1
		Rolea B'ier	12	1	0	0	2	15
		Subtotal (KCHN)	13	1	0	0	2	16
	KDL	Ponhea Leu	5	0	0	0	0	5
		Subtotal (KDL)	5	0	0	0	0	5
Total (Bypasses)			18	1	0	0	2	21
Total	PST	Krakor	123	71	0	168	82	444
		Subtotal (PST)	123	71	0	168	82	444
	KCHN	Baribour	201	122	3	171	39	536
		Kampong Tralach	149	116	3	149	84	501
		Rolea B'ier	125	76	0	124	44	369
		Sameakki Mean Chey	41	12	1	33	21	108
		Subtotal (KCHN)	516	326	7	477	188	1,514
	KDL	Ponhea Leu	34	2	0	20	15	71
		Subtotal (KDL)	34	2	0	20	15	71
	Total (the Project)			673	399	7	665	285

Data source: Project Survey conducted in January-April 2013

Table 17.3-3 Floor Area (in m²) of Affected Main Structures by Type of Materials

Type of Structure (m ²)	House	House/ Shop	Kitchen	Grange/ Storage	Shop/ Restaurant	Craft/ Workshop	Stall/ Market stall	Other	Total
1A	54.75	67.80	39.79	0.00	0.00	20.40	0.00	0.00	182.74
1B	86.90	16.00	0.00	0.00	0.00	0.00	0.00	0.00	102.90
1C	211.59	92.50	0.00	0.00	0.00	14.00	0.00	3.60	321.69
1D	0.00	28.80	0.00	0.00	0.00	38.50	116.18	55.50	238.98
2A	278.30	205.34	0.00	0.00	0.00	42.94	140.59	13.50	680.67
2B	245.66	522.15	0.00	0.00	0.00	183.80	826.92	82.29	1,860.82
2C	566.98	385.16	3.00	0.00	0.00	0.00	336.47	35.60	1,327.21
2D	202.05	20.00	0.00	0.00	0.00	0.00	46.75	0.00	268.80
2E	557.91	504.45	30.85	0.00	0.00	52.20	549.79	5.70	1,700.90
2F	97.80	129.16	171.00	0.00	0.00	0.00	155.96	238.00	791.92
2G	2,246.18	2,902.80	24.45	14.25	24.80	1,498.06	5,414.34	1,041.31	13,166.19
2H	339.08	147.83	0.00	0.00	0.00	26.40	336.93	17.60	867.84
2I	5,377.89	3,146.84	43.90	77.90	0.00	455.62	4,738.15	426.45	14,266.75
2J	3,286.94	2,358.05	85.18	55.06	122.00	1,150.36	2,881.06	1,245.35	11,184.00
2K	73.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	73.06
2L	739.96	520.98	0.00	0.00	0.00	0.00	0.00	0.00	1,260.94
3B	928.43	0.00	16.00	0.00	73.80	31.39	0.00	7.20	1,056.82
3C	87.70	253.22	0.00	0.00	0.00	87.50	89.70	0.00	518.12
3D	1,140.08	230.35	0.00	0.00	0.00	0.00	0.00	0.00	1,370.43
4A	864.45	661.83	0.00	0.00	0.00	0.00	0.00	0.00	1,526.28
4B	881.13	737.71	0.00	0.00	0.00	0.00	0.00	0.00	1,618.84
4C	100.29	48.28	0.00	0.00	0.00	0.00	0.00	0.00	148.57
S1	0.00	0.00	0.00	0.00	0.00	255.84	255.42	408.45	919.71
S2	0.00	0.00	77.20	80.00	223.01	3,759.42	2,064.16	17,981.82	24,185.61
S3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	370.64	373.64

Data source: Project Survey conducted in January-April 2013

(3) Affected Crops and Trees

The start of civil works and the cropping schedule of AHs cultivating within the ROW and bypass will be synchronized to allow smooth transition between harvesting of standing crops and the start of road construction in a particular section of the Project road. Therefore, standing crops will not be affected if those can be harvested before road construction, but if they cannot be harvested before road construction, the unharvested crops will be compensated at replacement cost. However, fruit or timber trees along the PRW will be cleared for the road construction. With regard, there were a total of 14,326 fruit and timber trees with various species and ages along the existing NR-5 south part and the two bypasses at Odongk and KCHN have been counted during the IOL. Of 14,326 fruit and timber trees, except some trees along KCHN Bypass, are not commercially grown, meaning they are sporadically planted inside the ROW.

17.3.3 Impact on Vulnerable Households

The AHs are more vulnerable to impoverishment caused by involuntary resettlement are the poor (i.e. under the national poverty line: income<20\$ per month/person), households headed by women, elderly, disabled without support mechanisms and landless households. The households falling within these groups were identified during the IOL will be updated at the time of DSM. They will get special cash assistance is needed to help them. The IOL result showed that there are 640 AHs with a total of 818 vulnerability factors (see Table 17.3-4). The additional special cash assistance for vulnerable AHs is \$100.00 per vulnerable AH.

Table 17.3-4 Vulnerable Factors and Vulnerable AHs (VAHs)

Province	District	Aged ≥60 Yrs	Widow	Disabled	Landless	Poor	VAHs
PST	Krakor	63	43	2	19	3	105
	Sub-total (PST)	63	43	2	19	3	105
KCHN	Baribour	75	58	6	27	4	128
	Rolea B'ier	129	101	7	26	25	219
	Kampong Tralach	63	54	3	30	3	128
	Samekki Mean Chey	18	4	1	7	1	26
	Sub-total (KCHN)	285	217	17	90	33	501
KDL	Ponhea Leu	25	18	0	2	1	34
	Sub-total (KDL)	25	18	0	2	1	34
TOTAL (Project)		373	278	19	111	37	640 AHs
818 factors							640 AHs

Data source: Project Survey conducted in January – April 2013.

17.4 Socio-Economic Profile of the Affected Households

An SES of AHs was also conducted at the same time of IOL survey. Most AHs, losing partially or entirely their assets such as structures, lands and/or trees, were interviewed for the purpose of gaining more information on their situation and present living standards. This activity was carried out aiming to prepare a more responsive RAP for people and households affected by the Project. Since there were instances when the AHs were unattended to during the survey, only 2,111 AHs along the existing NR-5 and the bypasses have been interviewed. The number of AHs interviewed represented 62.68% of all AHs (3,368 AHs).

The main objective of the SES is to create baseline survey by collecting accurate statistical information about living standard of the AHs. The topics are investigated in the survey were basic demography, literacy and education, economically active population, housing condition, possession of durable goods and livestock, household expenditure and income. Additionally, the survey was also directed to studying the perception of AHs on the Project.

17.4.1 Population and Household Composition

The total number of studied households is 2,111, which is composed of a population of 10,184. The population is comprised of 5,284 (51.9%) females and 4,900 (48.1%) males. Table 17.4-1 shows the details of population, sex ratio, as well as household size of the three provinces. An average household size is 4.8 and sex ratio is 92.7.

Table 17.4-1 Population and Household Composition

Stratum	Number of Households	Average HH Size	Population				Sex Ratio*	
			Both	Male		Female		
				No.	%	No.		%
Project Survey	2,111	4.8	10,184	4,900	48.1	5,284	51.9	92.7
PST	395	5.2	2,067	979	47.4	1,088	52.6	90.0
KCHN	1,637	4.7	7,698	3,713	48.2	3,985	51.8	93.2
KDL	79	5.3	419	208	49.6	211	50.4	98.6

Data source: Project Survey conducted in January – April 2013.

*Sex Ratio = (Number of male) / (Number of female) x 100(%)

17.4.2 Age Structure and Dependency

The survey results for the age-sex distribution of the affected commune are set out in Table 17.4-2. This entry provides the distribution of the population according to age. Information is included by sex and age group (0-13 years, 14-60 years, 60 years and over). The age structure of a population affects a nation's key socioeconomic issues. They indicate a young population, with about 35.1% under 18 years old. With young populations (high percentage under age 18) need to invest more in schools, while with older populations (high percentage ages 60 and over) need to invest more in the health sector.

Table 17.4-2 Age-Sex Distribution

Stratum	Population	0-5		6-13		14-18		19-60		60+		
		No.	%	No.	%	No.	%	No.	%	No.	%	
Project Survey	M	4,900	584	11.9	689	14.1	511	10.4	2,848	58.1	268	5.5
	F	5,284	530	10.0	729	13.8	543	10.3	3,050	57.7	432	8.2
	T	10,184	1,114	10.9	1,418	13.9	1,054	10.3	5,898	57.9	700	6.9
PST	M	979	105	10.7	149	15.2	98	10.0	583	59.6	44	4.5
	F	1,088	111	10.2	155	14.2	124	11.4	619	56.9	79	7.3
	T	2,067	216	10.4	304	14.7	222	10.7	1,202	58.2	123	6.0
KCHN	M	3,713	458	12.3	517	13.9	391	10.5	2,143	57.7	204	5.5
	F	3,985	402	10.1	543	13.6	394	9.9	2,313	58.0	333	8.4
	T	7,698	860	11.2	1,060	13.8	785	10.2	4,456	57.9	537	7.0
KDL	M	208	21	10.1	23	11.1	22	10.6	122	58.7	20	9.6
	F	211	17	8.1	31	14.7	25	11.8	118	55.9	20	9.5
	T	419	38	9.1	54	12.9	47	11.2	240	57.3	40	9.5

Data source: Project Survey conducted in January – April 2013.

The dependency ratio used to measure the proportion of children (below 15 years) and old people (from 65 years and over) compared to the proportion of people of workforce age (15-64 years).

The age dependency ratio is defined as the ratio of the sum of the population below 15 years and population from 65 years taken together divided by the active population between the age groups of 15 to 64 years. The age dependency ratio is a summary indicator that indicates the burden falling on the population of working age.

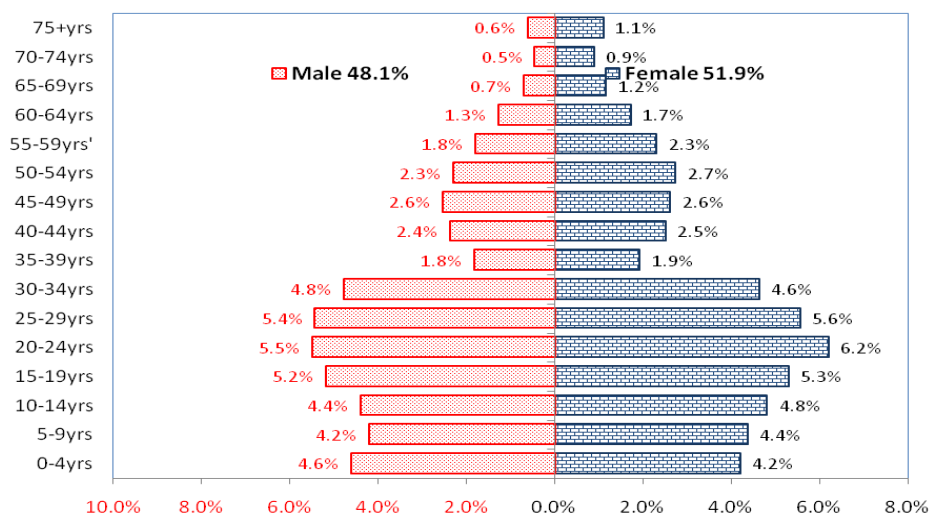
The age composition in Table 17.4-3 shows that 68.5% of the population was aged between 15-64 years. 26.6% was below 15 years and 4.9% was 65 years and over. The table also provided detail about youth dependency ratio (38.8%) and old age dependency ratio (7.2%). The total dependency ratio is 46.0%. This means there were 46.0 persons outside the usual working age group for every 100 persons in the age group 15-64 years who are economically dependent for economic support.

Table 17.4-3 Age Composition and Dependency Ratio

Stratum	Population		Below 15		15-64		65+		Dependency Ratio		
			No.	%	No.	%	No.	%	Youth	Old Age	Total
Project Survey	M	4,900	1,348	27.5	3,369	68.8	183	3.7	38.8%	7.2%	46.0%
	F	5,284	1,360	25.7	3,606	68.2	318	6.0			
	T	10,184	2,708	26.6	6,975	68.5	501	4.9			
PST	M	979	269	27.5	680	69.5	30	3.1	40.2%	6.0%	46.2%
	F	1,088	299	27.5	734	67.5	55	5.1			
	T	2,067	568	27.5	1,414	68.4	85	4.1			
KCHN	M	3,713	1,032	27.8	2,539	68.4	142	3.8	38.7%	7.5%	46.2%
	F	3,985	1,007	25.3	2,727	68.4	251	6.3			
	T	7,698	2,039	26.5	5,266	68.4	393	5.1			
KDL	M	208	47	22.6	150	72.1	11	5.3	34.2%	7.8%	42.0%
	F	211	54	25.6	145	68.7	12	5.7			
	T	419	101	24.1	295	70.4	23	5.5			

Data source: Project Survey conducted in January – April 2013.

Although not significant statistically, the age-sex figures are valuable in demonstrating that this is, comparatively, an ageing population, with a predominantly middle-aged population with a bulge in the 20-24 and 25-29 age group (11.7% and 11.0% respectively) and a corresponding bulge in the 10-19 year old age group (19.7% of the population), while the youngest two age groups, 5-9 year old, have only 8.6%. The relevance of these statistics is the likely higher impact on secondary school in-take in the project impact area than in the primary-school in-take.



Data source: Project Survey conducted in January – April 2013.

Figure 17.4-1 Age Pyramid by 5 years of Age Group

17.4.3 Marital Status

For classifying the marital status, 4 categories were used such as single (never married), currently married, divorced/separate and widowed. The currently married group included person who were living together whether or not their marriage had legal status. Although marital status information was collected for all age groups, it is useful to present data for the population aged 15 years and over only. For both sexes, 36.1% they are never married, 54.8% were currently married, 7.0% were widowed and 2.1% were divorced or separated.

Table 17.4-4 Marital Status for Both Sexes by Age Group

Age Group	Pop.	Single		Married		Divorced/separate		Widowed	
		No.	%	No.	%	No.	%	No.	%
15+ yrs	7,476	2,699	36.1	4,095	54.8	159	2.1	523	7.0
15 – 19 yrs	1,066	1,045	98.0	19	1.8	1	0.1	1	0.1
20 - 24 yrs	1,191	893	75.0	286	24.0	8	0.7	4	0.3
25 - 29 yrs	1,120	495	44.2	585	52.2	28	2.5	12	1.1
30 - 34 yrs	957	160	16.7	757	79.1	29	3.0	11	1.1
35 - 39 yrs	381	29	7.6	325	85.3	14	3.7	13	3.4
40 - 44 yrs	497	13	2.6	451	90.7	13	2.6	20	4.0
45 - 49 yrs	526	16	3.0	471	89.5	16	3.0	23	4.4
50 - 54 yrs	513	13	2.5	418	81.5	20	3.9	62	12.1
55 - 59 yrs	419	18	4.3	327	78.0	15	3.6	59	14.1
60 - 64 yrs	305	4	1.3	210	68.9	7	2.3	84	27.5
65 - 69 yrs	191	7	3.7	116	60.7	4	2.1	64	33.5
70 - 74 yrs	136	3	2.2	60	44.1	3	2.2	70	51.5
75+ yrs	174	3	1.7	70	40.2	1	0.6	100	57.5

Data source: Project Survey conducted in January – April 2013.

17.4.4 Ethnic Group and Religion

92.1% of affected household heads are Khmer and Khmer speaking, while 7% are minority ethnic Cham, who are legally registered as Cambodian citizens. They live and work as the Cambodians

and they are not vulnerable in terms of their livelihood.

Table 17.4-5 First Language and Ethnic Group of Household Heads

Stratum	No. H/H	Mother tongue and Ethnic Group					
		Khmer		Cham		Other	
		No.	%	No.	%	No.	%
Project	2,111	1,945	92.1	148	7.0	18	0.9
PST	395	385	97.5	9	2.3	1	0.2
KCHN	1,637	1,493	91.2	127	7.8	17	1.0
KDL	79	67	84.8	12	15.2	0	0.0

Data source: Project Survey conducted in January – April 2013.

Buddhism has been the dominant religion in Cambodia, in one form or another, since the reign of Jayavarman VII (c. 1181-1200). In Cambodia is currently estimated to be the faith of 95% of the population, but through the survey results it was found only 92.8% is Buddhism, 7.0% is Muslim and Christian is 0.1%.

Table 17.4-6 Religion of Household Heads

Stratum	No. H/H	Mother tongue and Ethnic Group					
		Buddhism		Muslim		Christian	
		No.	%	No.	%	No.	%
Project	2,111	1,960	92.8	148	7.0	3	0.1
PST	395	386	97.7	9	2.3	0	0.0
KCHN	1,637	1,507	92.1	127	7.8	3	0.2
KDL	79	67	84.8	12	15.2	0	0.0

Data source: Project Survey conducted in January – April 2013.

17.4.5 Vulnerable Groups

The study indicates to different type of vulnerable groups include elderly without supporting from youth, widow and female-headed households, physically and mentally handicapped, landless and poor household which their income is under national poverty line. Table 17.4-7 reported that 13.2% of sample is widow and female household heads. Poor women heads of household are forced by necessity to increasingly take men's roles and responsibilities, due to absence of male labour and inability to hire adult male labor. Female-headed households are indeed facing the double burden of taking care of the well-being of family members and other aspects compared to couple households.

Based on the survey results, an average percentage of each vulnerable factor in three different areas (PST, KCHN, and KDL) of disabled household head, aged⁵ household head, household living below poverty line (< 20\$/capita/month) and landless household is 0.9%, 17.7%, 1.8%, and 5.3% respectively.

⁵ Aged was defined as a person who is more than 60 years old and without young to support.

Table 17.4-7 Vulnerable Household Head

Stratum	Number of HHs	Aged (≥60 years)*		Female HHs		Disabled HHs		Landless		<USD 20/month/cap	
		No.	%	No.	%	No.	%	No.	%	No.	%
Project Survey	2,111	373	17.7	278	13.2	19	0.9	111	5.3	37	1.8
PST	395	63	15.9	43	10.9	2	0.5	19	4.8	3	0.8
KCHN	1,637	285	17.4	217	13.3	17	1.0	90	5.5	33	2.0
KDL	79	25	31.6	18	22.8	0	0.0	2	2.5	1	1.3

* "Aged" Vulnerable Household; HH head is older than 60 years old and with no other means of support.

* No child-headed household was found in the project area.

Data source: Project Survey conducted in January – April 2013.

17.4.6 Literacy

(1) Literacy of the Affected Households' Heads and Spouses

The male household head literacy rates are 96.4% and female spouse literacy rates are 88.9%. There is a small gap between the literacy rates of male household heads and their spouses. Among 526 female household heads, there are only 389 (74.0%) of them are literacy. Women, in general, receive less education than men, especially for widows. The survey results show that female HH are, 22% or more, less literate than male HH. Therefore, women enter the labor market with a lower education and less vocational skills than men. Even though, they (men and women) work the same job and same quality of work, but sometimes women still get a salary less than men.

Table 17.4-8 Literacy of Affected Households' Heads and Spouses

Stratum	Male AH Head			Female AH Head			Female Spouse		
	# AH	Yes	%	# AH	Yes	%	# AH	Yes	%
Project Survey	1,585	1,528	96.4	526	389	74.0	1,521	1,352	88.9
PST	329	318	96.7	66	52	78.8	322	288	89.4
KCHN	1,200	1,155	96.3	437	322	73.7	1,147	1,014	88.4
KDL	56	55	98.2	23	15	65.2	52	50	96.2

Data source: Project Survey conducted in January – April 2013

(2) Adult Literacy (age from 18 years and over)

Adult literacy rate is the percentage of the population aged 18 years and over who can both read and write a simple message in any language. The Table 17.4-9 presents an adult literacy rate of both male and female of 91.2% which is considerably high and the single literacy rate of male and female 96.1% and 86.7% respectively.

Table 17.4-9 Adult Literacy (age from 18 years and over)

Stratum	Both Sex			Male			Female		
	Pop.	Yes	%	Pop.	Yes	%	Pop.	Yes	%
Project Survey	7,476	6,817	91.2	3,552	3,413	96.1	3,924	3,404	86.7
PST	1,499	1,390	92.7	710	689	97.0	789	701	88.8
KCHN	5,659	5,133	90.7	2,681	2,569	95.8	2,978	2,564	86.1
KDL	318	294	92.5	161	155	96.3	157	139	88.5

Data source: Project Survey conducted in January – April 2013

17.4.7 Educational Attainment of the Population

Since 2000, education for all Cambodians has been re-energized by the world's commitment to the Millennium Development Goal (MDG). Based on its commitment toward the MDG, RGC, with assistance from its development partners and NGO communities, has made their efforts to develop a National Education Plan. Furthermore, the Ministry of Education, Youth and Sport has developed the Education for all policy documents. Cambodian MDG (Global MDG2) aims 'to ensure that by 2015, all children will be able to complete a full course of 9-year basic education'. (Source: Cambodia Millennium Development Goals Report November 2003).

Table 17.4-10 Education Attainment of Population aged 5 years and over

Stratum	Sex	None or Little	Primary Not Completed	Completed Primary Education	Completed Lower Secondary Education	Completed Upper Secondary Education	Post-Secondary Education
		%	%	%	%	%	%
Project Survey	Male	11.0	24.2	23.3	19.2	12.7	9.6
	Female	17.6	30.2	23.8	15.7	7.7	5.0
	Both	14.5	27.3	23.6	17.4	10.1	7.2
PST	Male	10.2	22.0	23.9	19.2	14.1	10.7
	Female	16.2	29.4	23.6	16.5	9.7	4.6
	Both	13.3	25.9	23.7	17.8	11.8	7.5
KCHN	Male	11.4	24.9	23.4	19.4	11.9	9.1
	Female	17.9	30.3	24.0	15.4	7.3	5.1
	Both	14.8	27.7	23.7	17.3	9.5	7.0
KDL	Male	8.4	21.6	20.5	15.8	18.9	14.7
	Female	19.0	33.5	21.5	17.0	4.5	4.5
	Both	13.8	27.7	21.0	16.4	11.5	9.5

Data source: Project Survey conducted in January – April 2013

In the Project area, 14.5% of the population (both male and female) has no or little education. The difference of none and little education between sexes is more than one and half with 17.6% for females and 11.0% for males. Around 23.6% of education attainment for both male and female has at least completed primary education. As shown in Table 17.4-10, there are only 17.4% who have completed lower secondary schooling, and 7.2% who have attended post-secondary education. The gap between sexes increases for higher level of education nearly double, i.e. 9.6% of males have post-secondary education, compared to females, which is only 5.0%.

17.4.8 Current School Attendance

Information on school attendance was collected in respect of the population aged from 6 to 14 years old. School attendance was defined as enrolment and studying at a primary and lower secondary school. School attendance in primary education is 95.3%, while lower secondary school is 96.1%. The percentage of primary school attendance is smaller than lower secondary school attendance due to most of pupils in primary school, are too young/small and they often leave school after a few months of school enrolment/registration.

In particular, rural poorer families in the past, young girls are probably allowed to attend school of grade 6 in primary school and after that they stay at home to help their families as additional agricultural labor. At the present, most of the families send and encourage their daughters to go to school in higher level of education. The Table 17.4-11 shows that about 96% of pupils have attended secondary school, while about 4% of the pupils have dropped out secondary school to help their families in earning income.

Table 17.4-11 Current School Attendance for Primary and Lower Secondary

Stratum	Sex	Primary School			Lower Secondary School		
		Age: 6-11	Attending	%	Age: 12-14	Attending	%
Project Survey	Male	485	463	95.5	279	268	96.1
	Female	501	477	95.2	329	316	96.0
	Both	986	940	95.3	608	584	96.1
PST	Male	105	103	98.1	59	58	98.3
	Female	105	101	96.2	83	81	97.6
	Both	210	204	97.1	142	139	97.9
KCHN	Male	365	347	95.1	209	199	95.2
	Female	375	357	95.2	230	220	95.7
	Both	740	704	95.1	439	419	95.4
KDL	Male	15	13	86.7	11	11	100.0
	Female	21	19	90.5	16	15	93.8
	Both	36	32	88.9	27	26	96.3

Data source: Project Survey conducted in January – April 2013

17.4.9 Affected Households' Head Engaged in Farming and Non-farming

About 28.4% of household heads are working on farms, while non-farming is 66.8% (Other rests 4.8% are aged or disable or unable to work.). Table 17.4-12 shows that the percentage of household heads working on farms is highest in KCHN with 30.1%, at locations where the bypass mostly traverses through rice fields and orchard land. A sizeable number of male and female household heads surveyed (356 persons or 29.7% and 137 persons or 31.4%, respectively) are engaged in farming.

Table 17.4-12 Farming and No-farming Affected Households' Head

Stratum	Number of Households		Non-farming		Farming	
			No.	%	No.	%
Project Survey	Male	1,585	1,081	68.2	446	28.1
	Female	526	330	62.7	153	29.1
	Total	2,111	1,411	66.8	599	28.4
PST	Male	329	245	74.5	75	22.8
	Female	66	49	74.2	14	21.2
	Total	395	294	74.4	89	22.5
KCHN	Male	1,200	799	66.6	356	29.7
	Female	437	265	60.6	137	31.4
	Total	1,637	1,064	65.0	493	30.1
KDL	Male	56	37	66.1	15	26.8
	Female	23	16	69.6	2	8.7
	Total	79	53	67.1	17	21.5

Data source: Project Survey conducted in January – April 2013

17.4.10 Fishing Community

Among 130 AHs interviewed, there are only 17 AHs (13.1%) are in fishing as part of their income. 12 AHs of the 17 AHs (70.6%) of the fishing family, only fish just for their leisure or eating, while 5 AHs (29.4%) get income from fishing.

Table 17.4-13 Fishing Activities around Odongk Town

Stratum	Number of HH	Fishing		Leisure/Eating		Selling/Money	
		Yes	%	Yes	%	Yes	%
Project Survey	130	17	13.1	12	70.6	5	29.4
Kampong Tralach (KCHN)	51	5	9.8	5	100.0	0	0.0
Ponhea Leu (KDL)	79	12	15.2	7	58.3	5	41.7

Data source: Project Survey conducted in January – April 2013

Based on the socio-economic survey, the main source of fishing for the 17 fishing families is a stream or small river, reservoir and Tonle Sap River.

Table 17.4-14 A place to Conduct the Fishing

Stratum	Number of HH	Reservoir		Tonle Sap river		Stream/small river	
		Yes	%	Yes	%	Yes	%
Project Survey	17	4	23.5	5	29.4	8	47.1
Kampong Tralach (KCHN)	5	0	0.0	2	40.0	3	60.0
Ponhea Leu (KDL)	12	4	33.3	3	25.0	5	41.7

Data source: Project Survey conducted in January – April 2013

Of the 17 fishing families, 76.5% do fishing only in rainy season, 11.8% do fishing only in dry season and 11.8% do fishing for the whole year. Among the 17 fishing families, there are only two families, in Ponhea Leu district, have joined in fishery community.

Table 17.4-15 Duration of the Fishing

Stratum	Number of HH	Whole year		Rainy season		Dry season	
		Yes	%	Yes	%	Yes	%
Project Survey	17	2	11.8	13	76.5	2	11.8
Kampong Tralach (KCHN)	5	0	0.0	5	100.0	0	0.0
Ponhea Leu (KDL)	12	2	16.7	8	66.7	2	16.7

Data source: Project Survey conducted in January – April 2013

17.4.11 Main Sources of Income of Affected Households

According to the survey, the main sources of income of the AHs include 72.8% business/trade followed by 63.8% from agricultural sector (agricultural production, livestock and fishing), and 57.9% depend on wages/salary. Remittance of 8.9% is also another main source of household

income from their jobs in other places.

Table 17.4-16 Main Source of Income of the AHs

Province	Project Survey		PST		KCHN		KDL	
Number of Households	2,111		395		1,637		79	
Item	No.	%	No.	%	No.	%	No.	%
Wages/salary	1,209	57.3	243	61.5	907	55.4	59	74.7
Farming hired labor	12	0.6	1	0.3	9	0.5	2	2.5
Business/trade	1,537	72.8	328	83.0	1,153	70.4	56	70.9
Agricultural production	990	46.9	168	42.5	789	48.2	33	41.8
Livestock	330	15.6	87	22.0	230	14.1	13	16.5
Fishing	28	1.3	3	0.8	24	1.5	4	5.1
Equipment making	116	5.5	4	1.0	110	6.7	2	2.5
Equipment rental	7	0.3	1	0.3	6	0.4	0	0.0
Transportation	86	4.1	15	3.8	69	4.2	2	2.5
House/land rental	85	4.0	13	3.3	71	4.3	1	1.3
Remittance	176	8.3	28	7.1	141	8.6	7	8.9
Other	155	7.3	40	10.1	109	6.7	6	7.6

Data source: Project Survey conducted in January – April 2013

17.4.12 Affected Households Income

Under the survey purposes, the affected household income included earnings and receipts from all sources received by all household members during the last year. Participants in the economic activity include employers, own account workers, employees or unpaid family workers, rentals (house, land, equipment, etc.) or recipient of pensions, grants, etc.

A significant number (75.3%) of male household heads reported that they are earning an annual income higher than USD 3,000 (among them, 46.6% earning more than USD 5,000 a year), while 15.1% reported an annual income between USD 2,000 and USD 3,000. Only 0.3% of the male household heads reported that their earnings are less than USD 600 a year.

Table 17.4-17 Annual Income (USD) of AHs Headed by Males

Stratum	<= 600		600+ - 1,000		1,000+ - 2,000		2,000+ - 3,000		3,000+ - 4,000		4,000+ - 5,000		5,000+		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Project	5	0.3	13	0.8	135	8.5	240	15.1	236	14.9	218	13.8	738	46.6	1,585	100.00
PST	0	0.0	2	0.6	15	4.6	36	10.9	33	10.0	40	12.2	203	61.7	329	100.00
KCHN	5	0.4	11	0.9	118	9.8	198	16.5	198	16.5	170	14.2	500	41.7	1,200	100.00
KDL	0	0.0	0	0.0	2	3.6	6	10.7	5	8.9	8	14.3	35	62.5	56	100.00

Data source: Project Survey conducted in January – April 2013

Likewise, a significant number (51.5%) of female household heads reported that they are earning an annual income higher than USD 3,000 (among them, 26.2% earning more than USD 5,000 a year), while 20.2% reported an annual income between USD 2,000 and USD 2,500. It is noted that all female household heads in KDL province earn income higher than USD 1,000 a year.

Table 17.4-18 Annual Income (USD) of AHs Headed by Females

Stratum	<= 600		600+ - 1,000		1,000+ -2,000		2,000+ -3,000		3,000+ - 4,000		4,000+ - 5,000		5,000+		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Project	13	2.5	26	4.9	110	20.9	106	20.2	72	13.7	61	11.6	138	26.2	526	100.00
PST	1	1.5	5	7.6	8	12.1	13	19.7	11	16.7	9	13.6	19	28.8	66	100.00
KCHN	12	2.7	21	4.8	101	23.1	91	20.8	55	12.6	47	10.8	110	25.2	437	100.00
KDL	0	0.0	0	0.0	1	4.3	2	8.7	6	26.1	5	21.7	9	39.1	23	100.00

Data source: Project Survey conducted in January – April 2013

Table 17.4-19 shows the sources of cash income of all 2,111 households interviewed. It reveals that the average monthly income of household and capita is USD 525.00 and USD 105.00, respectively. Of all interviewed households in the Project area, there are 59.22% has their main income from business/trade, 24.43% has their second main income from wages or salary and 5.58% has their third main income from agricultural sector(i.e. agricultural production, livestock and fishing).

Table 17.4-19 Average Annual and Monthly Income (USD) per Capita

Items	Annual Income			
	No. HH	USD	%	Average
Wages/salary	1,209	3,234,089.83	24.32	2,675.01
Farming hired labor	12	14,609.75	0.11	1,217.48
Business/trade	1,537	7,875,813.13	59.22	5,124.15
Agricultural production	990	361,889.82	2.72	365.55
Livestock	330	336,523.13	2.53	1,019.77
Fishing	31	43,501.25	0.33	1,403.27
Equipment making	116	220,277.25	1.66	1,898.94
Equipment rental	7	12,015.50	0.09	1,716.50
Transportation	86	300,420.63	2.26	3,493.26
House/land rental	85	163,518.15	1.23	1,923.74
Remittance	176	238,639.23	1.79	1,355.90
Other	155	497,976.73	3.74	3,212.75
Total		13,299,274.37	100.00	
Currency in USD		Annual	Monthly	
Number of Interviewed AHs = 2,111				
Household income**		6,299.99		525.00
Capita income***		1,260.00		105.00

* Each household gets income from more than one source

** [Household income]=[Total Annual Income]/[Total Number of Interviewed HHs]

*** A HH has 5 persons in average. (Capita income=Household income/5)

Data source: Project Survey conducted in January – April 2013

17.4.13 Credit

Generally, households in the project area have access to credits or loans from various agencies, both private/official and non-official credit institutions. The survey showed that 41.6% (878 AHs) of the 2,111 AHs have received credit from different agencies. The credit sources of the 878 AHs include 50.7% from private bank institutions, 25.9% from NGOs, 4.7% from credit providers, 14.6% from relatives, 2.5% from landlords/traders, and the rest of 1.7% from other credit sources.

Table 17.4-20 Credit Acquired During the Last Year

	Number of HHs	Received credits		Private Bank		NGOs/Society		Landlord/T raders		Credit Providers		Relatives		Others	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Project	2,111	878	41.6	445	50.7	227	25.9	22	2.5	41	4.7	128	14.6	15	1.7
PST	395	214	54.2	110	51.4	59	27.6	9	4.2	8	3.7	21	9.8	7	3.3
KCHN	1,637	628	38.4	317	19.4	161	9.8	11	0.7	26	1.6	105	6.4	8	0.5
KDL	79	36	45.6	18	50.0	7	19.4	2	5.6	7	19.4	2	5.6	0	0.0

Data source: Project Survey conducted in January – April 2013

Generally, households acquire loans for various purposes, such as for farming, health treatment, starting/expanding business, and family support. As shown in Table 17.4-21, most households (73.5%) get loans for expanding their businesses follows by 16.5% for supporting family members 15% for house repairing/building and 11.8% for health care.

Table 17.4-21 Purposes of Acquiring the Credit

Items	Project		PST		KCHN		KDL	
	No.	%	No.	%	No.	%	No.	%
Number of HHs	878		214		628		36	
Food consumption	72	8.2	8	3.7	56	8.9	8	22.2
Health care	104	11.8	21	9.8	77	12.3	6	16.7
Schooling costs	63	7.2	16	7.5	42	6.7	5	13.9
Building/repairing house	132	15.0	29	13.6	98	15.6	5	13.9
Ceremony/wedding	12	1.4	2	0.9	9	1.4	1	2.8
Farming	58	6.6	10	4.7	46	7.3	2	5.6
Business expanding	645	73.5	168	78.5	447	71.2	30	83.3
Supporting family members	145	16.5	15	7.0	128	20.4	2	5.6
Others	18	2.1	4	1.9	14	2.2	0	0.0

Data source: Project Survey conducted in January – April 2013

17.4.14 Sanitation

(1) Water Sources for Drinking and Cooking

Of the interviewed households in the Project area, only 4.6% use pipe water from waterworks and 58.1% from protected wells. Moreover, 29.3% buy clean water during the dry season for their daily consumption. Approximately, 7.4% use rainwater during the wet season, while 10.8% use water from unprotected wells. Lake/pond was the source of drinking water for only 0.6% (or 13 AHs) of the 2,111 AHs surveyed, while 0.2% still use water from stream/river.

Table 17.4-22 Water Sources for Drinking and Cooking

Stratum	#HHs	Stream/River		Lake/Pond		Protected Well		Unprotected Well		Rainwater		B u y i n g		Waterworks	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Project	2,111	4	0.2	13	0.6	1,227	58.1	229	10.8	156	7.4	618	29.3	97	4.6
PST	395	1	0.3	3	0.8	127	32.2	95	24.1	48	12.2	111	28.1	51	12.9
KCHN	1,637	3	0.2	3	0.2	1,095	66.9	134	8.2	94	5.7	443	27.1	45	2.7
KDL	79	0	0.0	7	8.9	5	6.3	0	0.0	14	17.7	64	81.0	1	1.3

Data source: Project Survey conducted in January – April 2013

73.0% of the interviewed households always boil their drinking water. Boiling water is by far the most common method for Cambodian people to protect from any bacteria. In addition, 6.8% of the interviewed households sometimes boil water before drinking, while 20.1% drink water without boiling.

Table 17.4-23 Boiling Water for Drinking

Stratum	Number of Households	Boiling Water for Drinking					
		Always		Sometimes		Never	
		No.	%	No.	%	No.	%
Project Survey	2,111	1,542	73.0	144	6.8	425	20.1
PST	395	277	70.1	42	10.6	76	19.2
KCHN	1,637	1,205	73.6	93	5.7	339	20.7
KDL	79	60	75.9	9	11.4	10	12.7

Data source: Project Survey conducted in January – April 2013

Approximately 19.0% of interviewed households have to buy water for washing/bathing during the dry season. Wells and rainwater (78.9%) are the most common water sources for the local people to make a bath and wash (see Table 17.4-24 for detailed information).

Table 17.4-24 Water Sources for Washing and Bathing

Stratum	#HHs	Stream/River		Lake/Pond		Protected Well		Unprotected Well		Rainwater		B u y i n g		Waterworks	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Project	2,111	6	0.3	15	0.7	1,371	64.9	246	11.7	48	2.3	402	19.0	96	4.5
PST	395	3	0.8	6	1.5	153	38.7	105	26.6	3	0.8	79	20.0	55	13.9
KCHN	1,637	3	0.2	1	0.1	1,210	73.9	140	8.6	30	1.8	263	16.1	40	2.4
KDL	79	0	0.0	8	10.1	8	10.1	1	1.3	15	19.0	60	75.9	1	1.3

Data source: Project Survey conducted in January – April 2013

(2) Toilet

In the Project area, 73.2% of the interviewed households have own latrine, while 26.8% do not have access to toilet facilities as they depend on “open defecation” or sharing toilets with their neighbours. In particular, 84.8% of respondents in Ponhea Leu District/KDL and 66.1% of AHs in Rolea B'ier District/KCHN have their own toilet.

17.4.15 Energy Sources for Lighting and Cooking

Battery is still the most commonly used energy source for lighting in Cambodia's rural areas, where electricity is not available. However, in the Project area, about 16% of the surveyed AHs claimed that they use rechargeable stationary batteries for lighting. Moreover, 77.5% use publicly provided electricity (state and private company) as their source, while 6.9% use kerosene lamp. About 0.5% of AHs claim that they use their own generators.

Table 17.4-25 Energy Sources for Lighting

Stratum	Number of HHs	Private Generator		State Electricity		Battery		Gas/Kerosene	
		No.	%	No.	%	No.	%	No.	%
Project Survey	2,111	37	1.8	1,597	75.7	339	16.1	146	6.9
PST	395	10	2.5	304	77.0	73	18.5	11	2.8
KCHN	1,637	27	1.6	1,217	74.3	264	16.1	135	8.2
KDL	79	0	0.0	76	96.2	2	2.5	0	0.0

Data source: Project Survey conducted in January – April 2013

Based on the survey results, 25.4% of interviewed households use liquefied petroleum gas as their source for cooking, while 70.1% and 36.4% use firewood and charcoal, respectively. Only 3.6% of interviewed households in the Project area use electricity as their energy source for cooking

Table 17.4-26 Energy Sources for Cooking

Stratum	Number of HHs	Firewood		State Electricity		Charcoal		Gas/Kerosene	
		No.	%	No.	%	No.	%	No.	%
Project	2,111	1,480	70.1	77	3.6	769	36.4	537	25.4
PST	395	257	65.1	8	2.0	148	37.5	82	20.8
KCHN	1,637	1,179	72.0	55	3.4	592	36.2	417	25.5
KDL	79	44	55.7	14	17.7	29	36.7	38	48.1

Data source: Project Survey conducted in January – April 2013

17.4.16 Transportation

Bicycles are more commonly used as a mode of transportation in rural areas, while motorcycles are more conveniently and more commonly used in urban areas. In the study, it reveals that around 65.7% of interviewed households have bicycles and 75.6% have motorbikes. Only a small amount of households have trucks, at about 3.3%, and 10.8% have a car/pickup/minivan. It was estimated that the average value of transport equipment in the Project area is around USD 2,214 per household.

Table 17.4-27 Transport Equipment and Its Values

Mode of Transport	Total Value (KHR)	Total AHs = 2,111	
		# Having	%
Bicycle	130,064,000	1,387	65.7
Motorbike	6,148,180,000	1,595	75.6
Car/pickup/minivan	9,682,800,000	228	10.8
Truck	2,684,700,000	69	3.3
Boat without engine	21,470,000	19	0.9
Boat with engine	30,550,000	6	0.3
Grand Total	18,697,764,000 (KHR)		
Average/Household	8,857,302 (KHR)	2,214 (USD)	

Exchange rate: USD 1 = KHR 4,000

Data source: Project Survey conducted in January – April 2013

17.4.17 Household Appliances

Telephones are the most common household appliance among the AHs interviewed, with 1,926 households (91.2%) reporting that they own at least one up to more than five per household. The second most common appliance is TV/VCR/VCP (76.0%). Table 17.4-28 shows the percentage of households owning other types of electrical appliances, such as 24.6% owning radio/cassette players, and 13.7% owning sewing machines. A small proportion of households own equipment for convenience such as generators at 9.7%, washing machines and air conditioners at 1.9%, and refrigerators 4.7%. It was estimated that the average value of other assets in the target area is around USD 196.70 per household.

Table 17.4-28 Household Appliances and Its Values

Stratum	Total Value (KHR)	Total Households = 2,111	
		#Having	%
Radio/cassette player	31,073,500	519	24.6
TV/VCR/VCP	486,372,000	1,605	76.0
Sewing machine	121,956,000	290	13.7
Air conditioner	61,920,000	40	1.9
Washing machine	25,360,000	41	1.9
Refrigerator	90,340,000	100	4.7
Telephone	594,326,000	1,926	91.2
Generator	249,500,000	205	9.7
Grand Total	1,660,847,500 (KHR)		
Average/Household	786,759 (KHR)	196.70 (USD)	

Exchange rate: USD 1 = KHR 4,000

Data source: Project Survey conducted in January – April 2013

17.4.18 Housing Characteristic

(1) Dwelling Space by Household

There are 2,111 dwellings in the sample. Average floor area of dwellings is 57.9 square meters (sqm) per household or 12.1 square meters per person (average household size is 4.8). For all Cambodia (CSES-2004), the average dwelling space per household is 42.0 sqm. The average floor area of dwelling ranged from 39.0 sqm per household in rural areas to 48.8 sqm in other urban areas, and to 64.3 sqm in urban Phnom Penh.

Table 17.4-29 Dwelling Space

Stratum	No. H/H	Total size in m ²	Average in m ²	≤ 20 m ²		20+ - 50 m ²		50+ - 100 m ²		100+ m ²	
				No.	%	No.	%	No.	%	No.	%
Project	2,111	122,315.4	57.9	170	8.1	916	43.4	791	37.5	208	9.9
PST	395	23,483.9	59.5	28	7.1	172	43.5	144	36.5	47	11.9
KCHN	1,637	93,347	231	139	8.5	714	43.6	614	37.5	150	9.2
KDL	79	5,484.7	69.4	3	3.8	30	38.0	33	41.8	11	13.9

Data source: Project Survey conducted in January – April 2013

(2) Building Material

In the studied area 66.2% of the roofs are built from galvanized iron, fibrocement and plastic sheet. There is 26.0% from roofing tile and only 2.8% from thatch. 53.8% of houses have wooden walls, the rest being mainly brick with 21.9%. 47.2% have wooden floors. The remaining 21.7% and 23.7% are of floor tile and mortar, respectively.

Table 17.4-30 Building Material

Construction Material (Total HH = 2,111)	Roof		Wall		Floor	
	No.	%	No.	%	No.	%
Thatch	59	2.8	254	12.0	-	-
Tin / Fibro/ Plastic Sheet	1,397	66.2	233	11.0	-	-
Wood	-	-	1,136	53.8	997	47.2
Bamboo	-	-	-	-	43	2.0
Roofing Tile	549	26.0	-	-	-	-
Floor Tile	-	-	-	-	458	21.7
Mortar	-	-	-	-	501	23.7
Concrete	80	3.8	-	-	-	-
Earth	-	-	-	-	86	4.1
Brick	-	-	462	21.9	-	-

Data source: Project Survey conducted in January – April 2013

17.4.19 People's Perception of the Project

(1) Satisfaction with the Project

AHs showed satisfaction with the Project since it was reported that 12.7% rated the Project as 'very good', and 49.6% rated it as 'good'. However, about 34.4% of the total households rated the Project as 'good and bad'.

Table 17.4-31 Satisfaction with the Project

Items	Project		PST		KCHN		KDL	
	No.	%	No.	%	No.	%		
No answer	5	0.2	1	0.3	4	0.2	-	-
Bad	64	3.0	10	2.5	47	2.9	7	8.86
Good and bad	726	34.4	90	22.8	619	37.8	17	21.52
Good	1,048	49.6	240	60.8	764	46.7	44	55.70
Very good	268	12.7	54	13.7	203	12.4	11	13.92
Total	2,111	100.0	395	100.0	1,637	100.0	79	100.00

"Bad": because the Project they will: 1) increase daily expend; 2) loss of good trading site; 3)increase accident;4)disturbs people and community;5) affect on house/shop; 6) loss of land use in PRW; 7) worsen access to school; 8) worsen environmental impact; 9) decrease household income;10) affected on public facilities; 11) loss of occupation; 12) worsen people health condition; and 13) make people migration away.

Data source: Project Survey conducted in January – April 2013

(2) Benefits of the Project

In the area of improvements, interviews revealed that around 75.2% of AHs believed that the Project will help decrease congestion/accident when travelling, while 52.2% mentioned it will improve access to other facilities. About 43.8% responded that the Project will improve cargo

transportation. Table 17.4-32 shows more detailed information on the Project benefits.

Table 17.4-32 Three ranks of Project Benefits

Most Important Benefits	Total Number of HHs = 2,111							
	Total		First		Second		Third	
	No.	%	No.	%	No.	%	No.	%
Improve cargo transportation	924	43.8	430	46.5	318	34.4	176	19.0
Appreciation of land prices	159	7.5	15	9.4	60	37.7	84	52.8
Reduced daily expenditures	195	9.2	8	4.1	35	17.9	152	77.9
Decrease of congestion/accidents	1,588	75.2	911	57.4	498	31.4	179	11.3
Improve access to other facilities	1,102	52.2	245	22.2	493	44.7	364	33.0
Flood prevention	35	1.7	9	25.7	13	37.1	13	37.1
Improve travel of tourists	546	25.9	107	19.6	207	37.9	232	42.5
Improve environment	399	18.9	64	16.0	128	32.1	207	51.9
Big push to outskirts area	582	27.6	160	27.5	123	21.1	299	51.4
Attract more investment	192	9.1	35	18.2	74	38.5	83	43.2
Create more direct/indirect jobs	276	13.1	46	16.7	87	31.5	143	51.8
Improve local product marketing	34	1.6	5	14.7	4	11.8	25	73.5

Data source: Project Survey conducted in January – April 2013

(3) Perception of Affected Households with Regards to Relocation

In terms of the perception of AHs concerning relocation due to the Project, 90.8% of interviewed households said that they agree to move from the PRW but will need some assistance from the Project. Meanwhile, 6.8% replied that they will voluntarily move without any compensation or assistance. About 2.1% did not answer. However, 0.3% of AHs refused to move from the PRW (see Table 17.4-33 for details).

Table 17.4-33 Perception of AHs with Regards to Relocation

Stratum	Number of Households	No Answer		Refuse to Relocate		Agree with Assistance		Voluntarily Move	
		No.	%	No.	%	No.	%	No.	%
Project	2,111	22	1.0	6	0.3	1,957	92.7	126	6.0
PST	395	3	0.8	1	0.3	332	84.1	59	14.9
KCHN	1,637	19	1.2	5	0.3	1,549	94.6	64	3.9
KDL	79	0	0.0	0	0.0	76	96.2	3	3.8

Data source: Project Survey conducted in January – April 2013

17.5 Organizational Framework

The owner of the Project is the Executing Agency (EA) which is MPWT; therefore, it has overall responsibility for the successful implementation of the RAP. The EA will be assisted by a number of Offices within and outside MPWT, starting with the Project Management Unit (PMU) which is tasked with undertaking the Project. The Environmental Section of PMU (PMU-ES) will be established to work closely with the RD (Resettlement Department) of the Inter-ministerial Resettlement Committee (IRC) for the preparation, updating, and implementation of the RAP.

17.5.1 The Environmental Section of the Project Management Unit (PMU-ES)

PMU-ES of MPWT under guidance of IRC will work closely with RD as the lead arm of the PMU in the preparation and implementation of the RAP. Its tasks include the followings:

- (i) Secure the approval of the RAP by IRC;
- (ii) Secure prior approval from IRC and JICA for any variations in the approved RAP;
- (iii) Secure the database of AHs and assets that will be gathered during the preparation and updating of the RAP;
- (iv) Prepare progress reports on RAP implementation for submission to MPWT, PMU and JICA.

17.5.2 The Inter-ministerial Resettlement Committee (IRC) & the Resettlement Department (RD)

IRC is a collegial body headed by the representative from MEF and composed of representatives from concerned line ministries, such as the Ministry of Interior; MPWT, MLMUPC; MEF and MAFF. Created by the Prime Minister through *Decision No.13, dated 18 March 1997*, in connection with the resettlement of AHs in the Highway 1 Project (Loan 1659-CAM), IRC has since been involved in other foreign-assisted government infrastructure projects with involuntary resettlement. IRC will be established on ad hoc basis for each project upon the request from Executing Agency. RD is a secretariat of IRC and will work closely with other relevant institutions to deal with all resettlement issues caused by the project. The IRC will be established for NR-5 project.

The institutional setup for resettlement and land acquisition is indicated in Figure 17.5-1

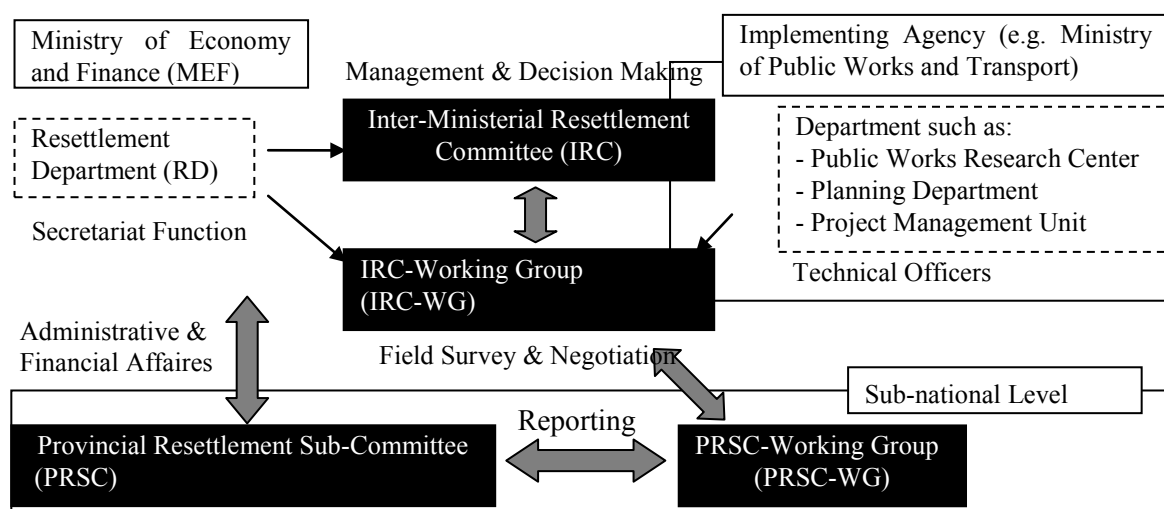


Figure 17.5-1 Inter-Ministerial Resettlement Committee (IRC) and Relevant Organizations

IRC will assume the function of a quasi-regulatory body, ensuring that funds for resettlement

are spent properly and that the RAP is carried out as intended. The technical arm of IRC is its RD.

The RD will assist IRC in the following tasks:

- (i) Reviewing and approving the RAP, ensuring its consistency with JICA Guidelines and, later, the loan agreement;
- (ii) Submitting the approved RAP to JICA;
- (iii) Request to Provincial Governor to establish PRSC and PRSC-WG;
- (iv) Orienting, as needed, PRSC and its WG (PRSC-WG) on their tasks relative to RAP updating and implementation;
- (v) Manage and supervise the implementation of RAP such as DMS;
- (vi) Negotiation and Contract making with APs;
- (vii) Securing from the national treasury the budget for carrying out the RAP, ensuring that funds are available in a timely manner and in sufficient amounts;
- (viii) Ensuring the approval of all disbursements connected with the implementation of the RAP, such as payment for compensation and other entitlements, acquisition and preparation of replacement plots, operational expenses of personnel, etc.;
- (ix) Ensuring that funds for resettlement are spent judiciously; and
- (x) Hire External Monitoring Agency to monitor the implementation of the RAP, ensuring that this is carried out in compliance with the Project resettlement policy and with the loan agreement.

17.5.3 Provincial Resettlement Sub-Committee

The Provincial Resettlement Sub-Committee (PRSC) is a collegial body at the provincial level. Headed by the Provincial Governor or Provincial Vice-Governor, its members are provincial department directors of line ministries represented in IRC, and also the chiefs of the districts and communes traversed along the Project road.

The technical arm of PRSC is PRSC-WG, which is headed by the Director (or a representative) of the Provincial Department of Public Works and Transport (PDPWT). The regular members of PRSC-WG come from the Provincial Government, the Provincial Department of Economy and Finance (PDEF), and the Ministry of Interior.

In an effort to make the whole process of resettlement effective, participatory and transparent, the chiefs of the affected communes and villages in affected communes will seat in PRSC-WG to tackle matters concerning their respective areas of jurisdiction.

PRSC, through PRSC-WG, will have the following functions:

- (i) Facilitate a sustained public information campaign, ensuring that the public, especially the AHs, are updated on any development regarding the Project and resettlement activities;
- (ii) Cooperate with IRC-WG in conducting the implementation of RAP and assist public consultation and information disclosure meeting;
- (iii) Manage the delivery of compensation and other entitlements to the AHs;
- (iv) Receive and act on the complaints and grievances of AHs in accordance with the Project resettlement policy; and
- (v) Maintain a record of all public meetings, grievances, and actions taken to address complaints and grievances.

17.6 Implementation Schedule

During the detailed design stage, DMS and RCS will be conducted under management of IRC-WG. DMS will be implemented by IRC-WG in close cooperation with PRSC-WG and relevant local authorities. RSC will be updated by independent agency hired by IRC. Based on the result of DM an RCS, IRC will calculate compensation amount and request budget disbursement to RGC.

During the DMS, consultation meeting will be held and project information booklet will be distributed to all AHs by IRC-WG assisted by PRSC-WG. The information program will precede the marking of the PRW. Grievance procedures and structure will be established prior to DMS. The preparation for the updating of the RAP will follow immediately after the final identification survey and DMS.

After the compensation amount is expected to be undertaken simultaneously for different sections of the road, the compensation process, including agreement and certified record of quantities and valuation of properties and physical payment of cash compensation and formal transfer of property in the form of land will take place before any construction start in a designated stretch of the road. Compensation payments are made at least 30 days before construction starts. The external monitor will be conducted during all of the above stages of implementation of the RAP. The external monitor's benchmark survey will be carried out prior to any physical relocation of AHs and AH structures.

IRC will mobilize its working group to work closely with PRSC-WG and the EMA before commencement of any resettlement activities, i.e., before RAP updating. Land acquisition and relocation of AHs will not commence until the updated RAP has been reviewed and approved by both IRC and JICA.

MPWT will ensure that contractor will not be issued notice to commence for any part of a section of a road to begin construction work unless it has (a) satisfactorily completed in accordance with the approved updated RAP, compensation payment and relocation; (b) ensured that income

restoration program is in place; and (c) area required for civil works is free of all encumbrances. Table 17.6-1 summarizes the various inter-related activities connected with the updating and implementation of the RAP.

Table 17.6-1 Indicative Schedule of Resettlement Activities

ACTIVITIES	SCHEDULE
JICA Approval of Draft RAP	October 2013
RAP Updating following Detailed Design	Mar – Aug 2015
Submission and JICA Approval of Updated RAP	Sep 2015
Implementation of the Approved Updated RAP	Oct 2015 – Sep 2016
Internal Monitoring (Submission of Quarterly Progress Reports)	Oct 2015 and forwarding
External Monitoring (Intermittent)	Nov 2015 to January 2017
Post-evaluation	Nov - Dec 2017
Start of Civil Works*	Oct 2016

* For sections where there are no resettlement impacts.

17.7 Public Participation and Consultation

Stakeholders of the Project include provincial/district, commune/village officials, local people along the existing NR-5, KCHN and Odongk Bypass, and managers and staff of PDPWT (see Table 17.7-1). Participation provides for the opportunity and the process by which stakeholders influence and become co-responsible for development initiatives and decisions that affect them. Through participation, the needs and priorities of the local population are solicited; the adverse social impacts of the Project, including the corresponding mitigating measures, are collectively identified; and the commitment and feeling of ownership over the Project is engendered among the AHs.

17.7.1 Participatory Activities in Resettlement Plan's Planning

The public, especially the AHs, the local governments and road users will be consulted and their opinions solicited. They will in fact participate in the preparation of the RAP. Table 17.7-1 summarizes the roles and responsibilities of the EA, local governments, and AHs in the reparation.

Table 17.7-1 Participatory Activities in RAP Planning

Project Process Stage	Participatory Activities and Participants	Outputs	Responsible Institution
Preparation or Feasibility	Briefing of the provincial, district, commune, village officials, local people along NR-5, KCHN and Odongk Bypass, and PDPWT about the Project technical assistance, the resettlement impact, and activities of the consultant (provincial and first commune stakeholder meeting).	The local population including AHs and their representatives, local government officials, and managers and technical staff of PDPWT participated in the meeting and were consulted on the objectives, planning and impact of the project and of resettlement.	MPWT and Consultant (JICA Study Team)

Project Process Stage	Participatory Activities and Participants	Outputs	Responsible Institution
	Conduct of IOL, census of AHs, social impact assessment, and RCS.	An IOL, census of AHs and RCS were conducted and the results were included in the RAP.	Consultants (JICA Study Team), assisted by local authorities and PDPWT.
	Discussion/consultation with IRC-RD and PMU-MPWT about the proposed project resettlement policy.	IRC were made fully aware of and consulted about social impact and resettlement policy.	Consultant (JICA Study Team)
	Initial disclosure meeting with AHs to discuss the results of the IOL and gather suggestions on how to minimize and mitigate impacts, and discuss about relocation options (second commune stakeholder meeting).	AHs and community leaders are informed of social impact and any damage or loss of property including land losses, and consulted on impact mitigation and resettlement including any relocation.	MPWT and Consultant (JICA Study Team)
	Drafting of the RAP and project information booklet (PIB) ⁶ and submission to PMU-MPWT, IRC-RD and JICA for review and approval.	Draft of RAP and PIB will be provided to and reviewed by MPWT, IRC-RD and JICA for approval.	Consultant (JICA Study Team)

17.7.2 Public Consultations During Resettlement Action Plan Preparation

During RAP preparation stage, the following public consultations were held at different stages.

- (i) Provincial stakeholder meeting
- (ii) Public Consultation Meeting (before cut-off date)

(1) Schedule of Stakeholder Meetings

The schedules of stakeholder meetings held regarding NR-5 are shown in Table 17.7-2.

Table 17.7-2 Public Meetings Held Regarding National Road No.5 and the Two Bypasses

Province	District/Commune	Venue	Date	Participants
Provincial Stakeholder Meeting				
KCHN	Krong Kampong Chhnang	PDPWT Office	6 Dec. 2012 at 9:30 am	Male = 26 Female = 2
PST	Krong Pursat	PDPWT Office	6 Dec. 2012 at 2:30 pm	Male = 14 Female = 1
Public Consultation Meeting (before cut-off date)				

⁶ The Project information booklet will be written in Khmer. The PIB will be distributed to each AH during the DMS, and updated PIB will be distributed before signing contract with AHs. An English version draft of PIB in *Appendix 17-1: Project Information Booklet (English Draft Version)* will be translated in Khmer and be distributed during the DMS. The updated PIB to be distributed before signing contract with AHs, information of rehabilitation options (including outline of IRP) will be added.

Preparatory Survey for National Road No.5 Improvement Project (Prek Kdam Bridge-Thlea M'am Section)

Province	District/Commune	Venue	Date	Participants
1-KCHN	Sameakki Mean Chey and Kampong Tralach District - Svay - Sedthei - Long Vaek	Svay commune center	25 Dec. 2012 at 8:30 am	Male=12 Female=5
2-KCHN	Kampong Tralach District - Ou Ruessei - Peani - Tma Edth	Ou Ruessei commune center	25 Dec. 2012 at 10:00 am	Male = 20 Female = 6
3-KCHN	Kampong Tralach District - Chhouk Sar - Chres - Ta Chres	Praseah Thmey Mosque	25 Dec. 2012 at 2:00 pm	Male = 33 Female = 30
4-KCHN	Kampong Tralach District - Saeb	Saeb commune center	25 Dec. 2012 at 3:30 pm	Male = 28 Female = 8
5-KCHN	Rolea B'ier District - Rolea B'ier - Chrey Bak - Srae Thmey	Chrey Bak pagoda	26 Dec. 2012 at 8:00 am	Male = 12 Female = 5
6-KCHN	Rolea B'ier District - Svay Chrum - Pongro	Preah Theat pagoda	26 Dec. 2012 at 9:30 am	Male=9 Female=5
7-KCHN	Baribour District - Melum - Phsar	Psar Baribour pagoda	26 Dec. 2012 at 2:00 pm	Male=35 Female=40
8-KCHN	Baribour District - Khon Rang - Popel	Angk pagoda	26 Dec. 2012 at 3:30 pm	Male=42 Female=67
9-KCHN	Baribour District - Trapeang Chan	Trapeang Chan Commune Centre	28 Dec. 2012 at 8:30 am	Male=18 Female=25
10-KCHN	Baribour District - Ponley - Chak	Ponley pagoda	28 Dec. 2012 at 10:00 am	Male=63 Female=29
11-KCHN	Rolea B'ier District - Toeuk Haut	Toeuk Haut commune center	28 Dec. 2012 at 10:00 am	Male=25 Female=43
12-PST	Krakor District - Boeung Kantuot - Thnaot Chum	Boeung Kantuot Commune Centre	27 Dec. 2012 at 8:00 am	Male=36 Female=40
13-PST	Krakor District - Sna Ansa - Ou Sandan	Sna Ansa Commune Centre	27 Dec. 2012 at 9:30 am	Male=26 Female=72
14-PST	Krakor District - Kbal Trach - Along Thnaot	CPP Centre of Krakor	27 Dec. 2012 at 2:30 pm	Male=36 Female=22
15-PST	Krakor District - Ansa Chambak	Ansa Chambak Commune Centre	27 Dec. 2012 at 4:00 pm	Male=15 Female=3
16-KDL	Ponhea Leu District - Kampong Luong - Vihear Luong	Vihear Luong Commune Centre	10 Apr. 2013 at 8:30 am	Male=80 Female=100
17-KCHN	Kampong Tralach District - Longvaek	Psar Trach primary school	10 Apr. 2013 at 10:00 am	Male=32 Female=10

(2) Key Points Raised and Discussed

(a) Provincial Stakeholder Meetings

Two provincial stakeholder meetings were conducted at the same day in Kampong Chhnang (included Kandal and Kampong Speu province) and Pursat province. During the meetings, a representative of MPWT made a short presentation which focused on background of NR-5 and its current situation, the Project and its impacts (positive and negative), result of initial survey, information about schedule of IOL and baseline survey (in July 2011). All participants were also provided with opportunities to discuss on bypass option.

The key points raised and discussed during the pre-IOL public meetings are the followings and the questions and responses of the meeting are summarized in Table 17.7-3.

- (i) Background of NR-5 and its current situation;
- (ii) TA objective, including Project background and its impacts (both positive and negative);
- (iii) The schedule of main activities for conduct an IOL, census of APs, social impact assessment, and replacement cost study (RCS);
- (iv) Discussion about the bypass options;
- (v) Discussion of other issues, including question and answer portion.

(b) Public Consultation Meeting (before cut-off date)

A few days before the IOL commenced on 1st January 2013 and 17th April 2013, the first of a series of public meetings with stakeholders (e.g., road users, residents of traversed communities, transport operators, government agencies, civil society, etc.) was held in Pursat, Kampong Chhnang and Kandal Provinces by the PMU-MPWT and the Consultant (JICA Study Team) for the purpose of discussing the following:

- (i) Project technical assistance background and objectives;
- (ii) Main activities of the research team (i.e., conduct of socio-economic household survey, IOL, RCS, etc.);
- (iii) The Project's policy on involuntary resettlement;
- (iv) Probable positive and adverse impacts of the Project, and recommendations on how to avoid and mitigate negative impacts;
- (v) Informing on Cut-Off Date: 1st January 2013 for NR-5 and KCHN Bypass and 11th April 2013 for Odongk Bypass; and
- (vi) Question and Response.

After an introduction of Local Authority, Director of International Cooperation Department (ICD)/MPWT described the background of NR-5 and its current situation, background of the Project and its impacts, both positive and negative. In each meeting, there was also an open

floor for discussion among the participants. The results of discussion are summarized in Table 17.7-3.

**Table 17.7-3 Questions and Responses of the Public Consultation Meeting
(Provincial level and before cut-off date)**

Question	Response
1. About the project implementation	
Can the project provide us a detailed design of the new road?	ICD/MPWT: This stage is a feasibility (initial) study, so we do not yet have any detailed road designing. It will be done during the detailed study or project implementation.
When will the civil works start?	ICD/MPWT: At the moment we do not exactly know, because the project is still studying. We will know when the project is approved.
Where will KCHN bypass be located?	ICD/MPWT: The bypass will be approximately started from PK: 82+000 crosses Chrey Bak commune, then goes to Srae Thmey commune before it crosses Phnom Tauch and continues to a conjunction between NR-5 and the access road to KCHN Airport. The bypass construction will require on private land, therefore the Project will compensate to the owners at the replacement cost based on the market price. From 1 st January 2013, people will not be permitted to build any structure on the PRW, particular for the bypass area. For bypass road, the study team will identify PRW alignment by pegging out in mid-January. After, that any construction in the PRW will not be allowed, and only cropping will be permitted.
What is the size of the actual road after the construction?	ICD/MPWT: The Project will take 40 m for the road construction area (PRW), but do not mean that the actual road is 40 m width. The actual road size will be known during the detailed design. According to the government policy, the Project will try to minimize its resettlement impact as much as possible. The road will be constructed in 4 lanes and two road sides for pedestrian and bicycle.
2. About the ROW/PRW	
The PRW is 20 m. How will it be measured, from the road center line?	ICD/MPWT: Yes, it will be measured from the road center line. So in total, it is 40 m. The ROW of NR 5 is 30 m, in total is 60 m. Therefore, the affected land will not be compensated, except affected structures and trees.
What size is the ROW in urban area?	ICD/MPWT: According to the sub-degree No.197, issued on 23 November 2009 stated that in urban are, the ROW will be defined by provincial or city governor in particularly.
What size of PRW of the KCHN bypass?	ICD/MPWT: It will be took 20 m in each side the same as NR-5.
3. About the relocation	
What will the Project do with the landless household?	ICD/MP WT: Now, we do not know how many there are landless household. Therefore, we have to conduct an IOL survey and then the Project will find a solution to solve the problem. The Project is development project. Therefore, local people will get the benefit from the project. It means their livelihood will be better because of the road construction.
Who will respond for removing the affected stall or house?	ICD/MPWT: There are four stages in resettlement implementation: 1- Data collection stage: IRC WG will conduct the DMS to collect and register all affected properties and AHs. 2- Contract making stage: After DMS conducting, IRC WG comes to make a negotiation with AHs for contact signing. 3- Compensation stage: After the contact signing, IRC will make compensation to the agreed AHs.

Question	Response
	4- The last stage is relocation. AHs will be given enough time for relocating their affected properties.
The Project implementation will affect my house in PRW. The remained land will be too small. What can the Project do for that?	ICD/MPWT: 1- The affected house will be compensated at replacement cost which will be calculated by engineer or master carpenter. The construction materials and labor cost will be calculated in market price in the local area. 2- Because the affected land in PRW/ROW, it is a state land and will not be compensated by the Project. But during the Project implement phase, RGC would have a clear policy to help AHs. In case, affected people do not have any more land or the remained land is not suitable for living, the Project will help them to solve the problem.
To avoid any lost, how many meters from the road that people can construct their houses?	ICD/MPWT: People have to construct their houses outside the ROW. It means more than 30 m from the road center line.
Can people continue to use on their remained land (10 m) in the ROW?	ICD/MPWT: People can continue to use the remained land only in crop cultivation purpose. In order to avoid any loss, permanent structures such as houses or shops will not be allowed to be built.
In the urban area, the PRW will be narrowed?	ICD/MPWT: In this stage it will be the same 20 m – 20 m for the whole Project. During the detailed design, it may be narrowed in some parts in order to minimize resettlement impact as much as possible or other bypass will be considered, e.g. Odongk Bypass.
4. About the compensation	
Will the Project compensate for affected electricity poles?	ICD/MP WT: There are two options: 1- In case it is a state property, it will be a special case that IRC have to negotiate with EDC. 2- If it is a private property, the budget for reconstruction will be covered by the construction road budget.
Will the Project compensate for affected structures and trees?	ICD/MP WT: It will be compensated at replacement cost which will study by an independent consultant. The affected structures and trees will be classified by size, age and types.
I have bought a land in ROW. Will the Project compensate for the affected land?	ICD/MP WT: As everybody knows, the land in ROW is the state land. Therefore, there is no compensation at all for such affected land. People, who have bought the land in ROW, is illegally.
Will the Project compensate for the whole structure if it is affected in a part?	ICD/MP WT: It will be based on the actual structure figure. Sometimes, the structure is affected a part, but it cannot be cut so the compensation have to be done for the whole structure. On the contrary, if the structure can cut in affected part, so the compensation will be done only the affected size. The compensation for the affected structure will be divided by type, size and number of floor.
Will the Project compensate for my affected well in PRW?	ICD/MP WT: Of course, people will get compensation for their affected wells, even though it is constructed in ROW.
Will the Project compensate for land improvement in PRW?	ICD/MPWT: If the people have been filling the land (for house construction or business activity against a pond resulted from previous road construction) in PRW, the land improvement will not be compensated, because after the road construction all the land in PRW will be reinstated by a contractor. After the Project implementation, it will be the same as or better than the original condition.
What will the Project do with severely affected persons who cannot restore their properties by the amount of compensation	ICD/MPWT: The government would not make someone to be suffered by the Project development. The Project policy will be approved, not only by the Cambodia government, but also by a donor of the Project.

Question	Response
provided?	Moreover, the compensation rates (the replacement cost based on the market prices) will be studied by the independent agency. In addition, the compensation rate will refer to the different types of houses such as zincs house, concrete house, etc. It also includes labor force and construction materials and transportation fee. The construction material price will refer to the prices in the local areas of AHs. And for the trees, the compensation will refer to the different types and ages of trees such as small or medium trees. The Project is developed for public interest. It is different from private investments. The public interest will be strongly considered by the Project. The income restoration program also will be provided by the project to help SAHs to improve their household incomes.
I have paid about USD 10,000.00 for my house construction. Would the Project compensate for the same amount?	ICD/MPWT: The study team will conduct RCS in mid-January 2013. The RCS results are based on market price for both construction materials and labor cost. Therefore, with the compensation rate people can rebuild their houses in the same previous houses.
Will the Project pay for the affected public fence?	ICD/MPWT: Affected fence will be replaced with new ones, if they are public property. In case it is a private property, the Project will compensate to the owner with replacement cost. It means people can restore their fences by the compensation to be provided.
If the construction work affects religious worship places such as spirit houses, how does the Project compensate for the community?	ICD/MPWT: In this case, the Project will be tried to avoid its impact as much as possible. In case, it could not avoid the Project will discuss with the community to find a suitable place to reconstruct it. It ensure that the new one is the same as or better than the old one. The cost for ceremony also will be provided if it is needed.
Land in PRW of NR-5 belongs to the government, but people have planted their crops and trees in the area. Do the Project compensate for it or not?	ICD/MPWT: The Project will compensate in order to support AH income, because their incomes from the crops or trees will be temporarily decreased by the Project Impact.
Are there any compensate for the affected land?	ICD/MPWT: The affected lands will be divided into two types of land: 1- For land in ROW, the project will not compensate, because the affected land is a state land. 2- For private land, the project will compensate to owner with replacement cost. So affected people can have enough money to buy a similar land to the affected land.

17.7.3 Public Consultations after IOL

After IOL survey, another stakeholder meetings were held as below.

(1) Schedule of Stakeholder Meetings

The schedules of stakeholder meetings held regarding NR-5 are shown in Table 17.7-4.

Table 17.7-4 Public Meetings Held Regarding National Road No.5 and the Two Bypasses

Province	District/Commune	Venue	Date	Participants
Public Consultation Meeting (after IOL)				
1-KDL	Ponhea Leu District - Kampong Luong - Vihear Luong	Vihear Luong commune center	12 August 2013 at 8:30 am	Male=50 Female=35
2-KCHN	Sameakki Mean Chey and Kampong Tralach District	Psatrach primary school	12 August 2013 at 10:00 am	Male=27 Female=13

Preparatory Survey for National Road No.5 Improvement Project (Prek Kdam Bridge-Thlea M'am Section)

Province	District/Commune	Venue	Date	Participants
	- Svay - Long Vaek			
3-KCHN	Sameakki Mean Chey and Kampong Tralach District - Sedthei - Peani	Spean Pou primary school	12 August 2013 at 2:00 pm	Male=29 Female=13
4-KCHN	Kampong Tralach District - Ou Ruessei - Tma Edth	Ou Ruessei commune center	12 August 2013 at 3:30 pm	Male=31 Female=25
5-KCHN	Kampong Tralach District - Chhouk Sar - Chres - Ta Chres	Praseah Thmey Mosque	13 August 2013 at 8:30 am	Male=36 Female=22
6-KCHN	Kampong Tralach District - Saeb	Saeb commune center	13 August 2013 at 10:00 am	Male=30 Female=6
7-KCHN	Rolea B'ier District - Toeuk Haut	Toeuk Haut commune center	13 August 2013 at 2:00 pm	Male=38 Female=10
8-KCHN	Rolea B'ier District - Andaung Snay - Rolea B'ier - Chrey Bak	Santey as	13 August 2013 at 3:30 pm	Male=120 Female=140
9-KCHN	Rolea B'ier District - Srae Thmey	Ceremonial hall of Troak Lech	14 August 2013 at 8:00 am	Male=135 Female=120
10-KCHN	Rolea B'ier District - Svay Chrum - Prasneub - Pongro - Banteay Preal	Preah Theat pagoda	14 August 2013 at 10:00 am	Male=200 Female=135
11-KCHN	Baribour District - Melum - Phsar	Psar Baribour pagoda	14 August 2013 at 2:00 pm	Male=36 Female=29
12-KCHN	Baribour District - Khon Rang - Popel	Angk pagoda	14 August 2013 at 3:30 pm	Male=27 Female=29
13-KCHN	Baribour District - Trapeang Chan	Trapeang Chan Commune Centre	16 August 2013 at 8:30 am	Male=21 Female=26
14-KCHN	Baribour District - Ponley - Chak	Svay Kal pagoda	16 August 2013 at 10:00 am	Male=72 Female=38
15-PST	Krakor District - Boeung Kantuot - Thnaot Chum	Boeung Kantuot Commune Centre	15 August 2013 at 8:30 am	Male=22 Female=14
16-PST	Krakor District - Sna Ansa - Ou Sandan	Sna Ansa Commune Centre	15 August 2013 at 10:00 am	Male=19 Female=43
17-PST	Krakor District - Kbal Trach - Along Thnaot	CPP Centre of Krakor	15 August 2013 at 2:00 pm	Male=66 Female=54
18-PST	Krakor District - Ansa Chambak	Ansa Chambak Commune Centre	15 August 2013 at 3:30 pm	Male=38 Female=72

(2) Key Points Raised and Discussed

From 12 to 16 August 2013, after submission RAP to MPWT, the second of a series of public meetings with stakeholders at communal level (e.g., local authorities, road users, residents of traversed communities, transport operators, government agencies, civil society, etc.) was held in Kandal, Kampong Chhnang (KCHN) and Pursat Provinces by the PMU-MPWT and the Consultant (JICA Study Team) for the purpose of discussing the following:

- (i) Project outline, technical assistance background and objectives;
- (ii) Briefing on the Project's policy on involuntary resettlement;
- (iii) Summary of results in conduct of socio-economic household survey;
- (iv) Probable positive and adverse impacts of the Project, and recommendations on how to avoid and mitigate negative impacts; and
- (v) Question and Responses.

During the meetings, all participants were re-informed and explained about the Cut-off Date is "1st January 2013" for the existing NR-5 and KCHN bypass and 11th April 2013 for the Odongk bypass. In each meeting, there was also an open floor for discussion among the participants. The results of discussion are summarized as Table 17.7-5:

Table 17.7-5 Questions and Responses of the Public Consultation Meeting

Question	Response
1. About the project implementation	
Before the civil construction, what will be going on?	ICD/MPWT: There are some studies such as social and environment impact, engineering design, etc. The SHM will be also conducted in purpose to consult and collect primary data from authority and local people. Then, the combine report (social, environmental and engineering) will be submitted to the Government and JICA. If both parties approved the report and agreed on loan agreement, the next step is selected the consultant for detailed design. Then, IRC will recruit their WG to conduct DSM and updated RAP. After the payment to AHs and relocation process, the civil construction will start.
Could you tell us, when the project will be started implementation?	ICD/MPWT: This study is the primary process to collect all impact data and consultation information from people. After this process, the RAP will be submitted to JICA and Gov. for approval. In case both parties agreed, the detailed design phase will be continued. At the moment, an exactly time schedule could not specify.
Do they really build the bypass in Odongk City? And why have to build it?	ICD/MPWT: The purpose of construction by pass is to: <ul style="list-style-type: none"> • Minimize project impact in both social and environmental. The study found that it will be more affected to people who are living in the town. So a negative impact of the project is more. • Reduce a traffic volume due to the road is ASEAN High Way that will be caused to increase traffic accident, noisier and more pollution. • The bypass will bring economic growth into the area, because the land along it will become an industry zone. • Expend the city that will be over capacity to load people due to the population increase from day to day.
When will the civil works start?	ICD/MPWT: At the moment we do not exactly know, because the project is still studying. We will know when the study is approved. If the government and JICA approved on the study, then the detail study will be continued and IRC WG will be recruited to update RAP. So, it will be taken more than 3 years.
After constructing the bypass, what	ICD/MPWT: The existing NR-5, in the Odongk city, will become

Question	Response
will do with the existing NR-5 in Odongk urban?	local road and it will be under PDPWT administered.
The suggestion from villagers	We would like suggest to the designing expert that the designing should be focused on bridge construction rather than constructing a box culvert. It is to avoid the flooding that destroyed our rice.
2. About the ROW/PRW and Relocation	
After the relocation, could we continue to live on the remained ROW land (10 meters)?	ICD/MPWT: Of course, people could keep living as normal. In order to avoid any loss, they could not build any more permanent structures such as houses or shops on it. But for the people who have more land outside the ROW, they should move out. People can also continue to use the remained land in crop cultivation purpose.
Who will respond for removing the affected stall or house?	ICD/MPWT: There are four stages in resettlement implementation: 1- Data collection stage: IRC WG will conduct the DMS to collect and register all affected properties and AHs. 2- Contract making stage: After DMS conducting, IRC WG comes to make a negotiation with AHs for contact signing. 3- Compensation stage: After the contact signing, IRC will make compensation to the agreed AHs. 4- The last stage is relocation. AHs will be given enough time for relocating their affected properties.
Is the ROW measured from the center line or edge of road?	ICD/MPWT: The ROW is calculated 30 meters from the center line in both sides of the Road. ROW is the state property land. It means no one could use as private ownership. For the people who already live on the ROW is only temporary.
How many meter of ROW land will be used to build this road (PRW)?	ICD/MPWT: Due to the agreement from MPWT and JICA study team, the survey was covered only 20 meters in both sides from the road center line. But the drawing will be detailed designed after this study if RGC and JICA approved on the study report. However, the people who are living on remained ROW (10 meters), they can still continue to live.
How to calculate the right of way?	ICD/MPWT: The right of way land is calculated from the center line of existing road in 30 meters from both sides. It is a state land. That means no one can claim full ownership on that land. For people who live on the ROW is only temporary.
How to calculate the ROW on bypass?	ICD/MPWT: There is no right of way for bypass, because it is a private land. In case, the road will be widening in future the government will buy more land from people.
To avoid any lost in the future, how many meters from the road that people can construct their houses?	ICD/MPWT: People have to construct their houses outside the ROW. It means more than 30 m from the road center line.
In the urban area, the PRW will be narrowed?	ICD/MPWT: In this stage it will be the same 20 m-20 m for the whole Project. During the detailed design, it may be narrowed in some parts in order to minimize resettlement impact as much as possible.
After the meeting, can I repair my house in the PRW?	ICD/MPWT: The people can repair it, but can't expand it. It was already included in the report as baseline data (IOL).
We know there is the right of way, why the local authority allowed people to use the land before?	ICD/MPWT: The Government did not clear the ROW, because people can get income from the ROW using. Therefore, the Government asks people to relocate when the ROW is needed for public use such as road widening. However, the government and JICA are trying to solve this issue by making a good resettlement policy to minimize the negative impact as much as possible.
Is the road expending (PRW) in the same size for both sides?	ICD/MPWT: In principal, the PRW is the same size (20 m) for both sides, but for the detailed design is not really the same due to land situation. For IOL will study in 20 m-20 m in both sides.
I will lose all land (landless) after the road construction, what the project will deal with me?	ICD/MP WT: Now, we do not know how many there are landless household. Therefore, we have to conduct an IOL survey and then the Project will find a solution to solve the problem. The Project is development project. Therefore, local people will get the

Question	Response
	benefit from the project. It means their livelihood will be better because of the road construction.
What size is the ROW in urban area?	ICD/MPWT: According to the sub-degree No.197, issued on 23 November 2009 stated that in urban are, the ROW will be defined by provincial or city governor in particularly.
3. About the compensation and other assistance	
How the project will compensate for my affected house?	ICD/MPWT: It will be compensated at replacement cost which will study by an independent consultant. The affected structures will be classified by types of structures. Please remember that only those structures are constructed before the cut-off date will be eligible for the compensation. For any structure is built after the cut-off date will not eligible for the compensation.
In case I have landownership certificate from local authority, what the project will deal with the affected land?	ICD/MPWT: The affected lands will be divided into 2 types of land: 1- For land in ROW, the project will not compensate, because the affected land is a state land. 2- For private land, the project will compensate to owner with replacement cost. So affected people can have enough money to buy a similar land to the affected land. If you have a land ownership certificate for the PRW (in urban area), so people have to show the documents to the IRC WG and they will deal with it to find a solution during the implementation phase of the project. Because, the Ministry of Land Management, Urban Planning and Construction (MLMUPC) will also join in the IRC WG.
I am old and lonely, how will the project compensate me if my land and house are affected in the PRW?	ICD/MPWT: Bases on the land law, the ROW is a public state land, therefore it has no compensation for that affected land at all. But all affected structures and trees, in the PRW before the cut-off date, will be compensated base on compensation policy. People should not be worried much about the compensation, because: 1- The policy is strongly considered on reducing the negative impact as much as possible; 2- The purpose of the road rehabilitation is to bring economic growth for people. Therefore the Government will not make people to be suffered by the project. For that reason, the study team has conducted the serial of SHM, IOL and other studies to give the opportunity to people to raise their worries or concerning issues to the project for consideration. The study in this stage, it is only collecting the impact data for preparation a draft budget for resettlement and to help MPWT/IRC and JICA to set up an efficient resettlement policy for the affected households. In the further step, IRC WG will be conducted more detailed study for making the compensation to AHs.
If the construction work affects religious worship places such as spirit houses, how does the Project compensate for the community?	ICD/MPWT: In this case, the Project will be tried to avoid its impact as much as possible. In case, it could not avoid the Project will discuss with the community to find a suitable place to reconstruct it. It ensure that the new one is the same as or better than the old one. The cost for ceremony also will be provided if it is needed.
How to deal with the affected public or community property?	ICD/MPWT: The affected public or community property will be replaced with new ones. IRC WG will invite a few contractors to bid for rebuilding the affected properties.
If people still continue to build their structures on the PRW after Cut-off date, they can receive compensation or any assistance from the project?	ICD/MPWT: The cut-off date was already informed, during the first SHM at the communal level, that any structure construct after the cut-off date will not eligible for getting the compensation or any assistance from the project.
Who is responsible for the property loss compensate? Is it JICA?	ICD/MPWT: No, the compensation will be a responsibility of the Cambodia Government side, which is implemented through IRC based

Question	Response
	on the approved policy by JICA and the Government of Cambodia. JICA will provide only a loan for road construction. Even though, JICA is also much considerate on resettlement policy during the loan agreement signing.
If there is affected grave, how the compensation will be applied?	ICD/MPWT: The compensation will be based on the replacement cost which is included all cost of land (if private land), construction materials, labor and ceremony. IRC WG has good experiences in doing this for e.g. Neak Loeung bridge and NR-1 project.
When will the compensation be started and how much per a square meter of the private land?	ICD/MPWT: The compensation of affected land will be applied at replacement cost by reflecting to market price. Due to the project implementation will take in a few years next, so The compensation rate for affected land will be based on the market price at that time. The compensation will be started at the implementation time.
Will the Project compensate for land improvement in PRW?	ICD/MPWT: If the people have been filling the land (for house construction or business activity against a pond resulted from previous road construction) in PRW, the land improvement will not be compensated, because after the road construction all the land in PRW will be reinstated by a contractor. After the Project implementation, it will be the same as or better than the original condition.
How is different for compensation between residential and rice field land? They also concern that the land price, after the compensation period, will be increased, so the compensation amount will not enough to buy land.	ICD/MPWT: The compensation rate for affected land will be classified by each category and location too. It will be study by independent agency which has good experience for assets evaluation. It also is based on the current market price. Another reason, in the project area there is much available land for people to buy if comparing to the affected land. Therefore, with the compensation amount, people could restore their lost properties.
Is there any compensation for affected structures in the ROW?	ICD/MPWT: As informed in the first SHM at communal level and also through IOL survey team that any properties in ROW that settled before the cut-off date will be compensated by the project.
My rice field land will be affected by the bypass construction, what the compensation is made?	ICD/MPWT: The IOL already included all private affected lands by the bypass. The compensation also based on the replacement cost. The price could not be told at this time because the project was not yet implemented. IRC and Provincial Resettlement Subcommittee will inform to all APs during the project implementation phase. The land price will be classified as rice field, flooded, residential and commercial land.
Will the Project compensate for my affected well in PRW?	ICD/MP WT: Of course, people will get compensation for their affected wells, even though it is constructed in ROW.
Do they compensate affected drainage and gates in the ROW?	ICD/MPWT: The affected properties will divided into 2 types: (i) public property: it will be reconstructed by IRC and (ii) Private property: it will be compensated in cash by the project. The compensation will be done after resettlement DMS process is approved. Any properties before the cut-off date will included into the resettlement budget.
I have bought a land in ROW. Will the Project compensate for the affected land?	ICD/MP WT: As everybody knows, the land in ROW is the state land. Therefore, there is no compensation at all for such affected land. The buying land, in ROW, is illegally.
Currently, many people are having business stall in the ROW, how the project will compensate to us?	ICD/MPWT: During the RAP updating, the study team will conduct updated RCS. The RCS results are based on market price for both construction materials and labor cost. Therefore, with the compensation rate people can rebuild their stall as the same previous condition.
Will the Project compensate for the whole structure if it is affected in a part (3 m)?	ICD/MP WT: It will be based on the actual structure figure. Sometimes, the structure is affected a part, but it cannot be cut so the compensation have to be done for the whole structure. On the contrary, if the structure can cut in affected part, so the compensation will be done only the affected size. The compensation for the affected structure will be divided by type,

Question	Response
	size and number of floor.
Will the Project compensate for crops in PRW?	ICD/MPWT: The Project will compensate in order to support AH income, because their incomes from the crops or trees will be temporarily decreased by the Project Impact.
Suggestion from local authorities	LA is happy to support the NR-5 project. They are also closely cooperated with the project study team. However, they would like the project to have special support for vulnerable affected person. The compensation rates are also should be acceptable and reasonable in transparent manner. Otherwise the APs will become poorer.
Suggestion from villagers	<ul style="list-style-type: none"> • The resettlement policy has to be clear, reasonable and acceptable; • The compensation rates for affected properties have to be acceptable and reasonable. During the project implementation, all practical issues have to be follow to the approved resettlement policy; • IRC has to work closely and considerably with affected people in DSM and Compensation process; • IRC has to take much attention on the people who will lose their business places, because they will lose their jobs. In addition, to AHs will lose totally their houses and land; • The project design has to be considered on how to avoid the flooding; • The project study team has to considered with minimize project impact as much as possible; • The compensation payment for the affected properties has to be done before the civil works starting. Otherwise the affected people will be fallen into poverty.

17.8 Grievance Redress

Grievances of AHs in connection with the implementation of the RAP will be handled through negotiation with the aim of achieving consensus. Complaints will go through three stages before they may be elevated to a court of law as a last resort.

17.8.1 First Stage, Commune Level

An aggrieved AH may bring his/her complaint to the commune leader. The commune leader will call for a meeting of the group to decide the course of action to resolve the complaint within 15 days, following the lodging of complaint by the aggrieved AH. The meeting of the group consists of the commune leader, representative/s from PRSC-WG of the district offices, and the aggrieved AH. The commune leader is responsible for documenting and keeping file of all complaints that are coursed through him/her. If after 15 days the aggrieved AH does not hear from Village or Commune, or if the AH is not satisfied with the decision taken by in the first stage, the complaint may be brought to the District Office either in writing or verbally.

17.8.2 Second Stage, District Office

The District office has 15 days within which to resolve the complaint to the satisfaction of all concerned. If the complaints cannot be solved in this stage, the district office will bring the case to the Provincial Grievance Redress Committee.

17.8.3 Third Stage, Provincial Grievance Redress Committee

The Provincial Grievance Redress Committee, which consists of Provincial Governor or Deputy Governor as a committee chairman and Directors of relevant Provincial Departments as members will be established in each province prior to DMS, meets with the aggrieved party and tries to resolve the complaint. The Committee may ask to PRSC-WG for a review of the DMS by the EMA. Within 30 days of the submission of the grievance the Committee must make a written decision and submit a copy of the same to MPWT, the EMA, IRC and the AH.

17.8.4 Final Stage, the Court Procedures

If the aggrieved AH is not satisfied with the solution made by the Provincial Grievance Redress Committee based on the agreed policy in the RAP, the committee shall file administrative procedures against the AHs with the participation of provincial prosecutors. The case will be brought to the Provincial Court and the same will be litigated under the rules of the court. At the same time, the AH can bring the case to the Provincial court. During the litigation of the case, RGC will request to the court that the project proceed without disruption while the case is being heard. If any party is unsatisfied with the ruling of the provincial court, that party can bring the case to a higher court. The RGC shall implement the decision of the court.

17.9 Relocation Strategy

17.9.1 Preferred Option by Landless AHs

Landless AHs have expressed their preferred option for relocation during stakeholder meeting in December 2012. They expressed their desire to relocate near the road or at near public facilities such as public hospitals, schools, markets, worships, and with provision of basic infrastructures such as access road in the resettlement sites, toilets, water supply connection, etc. Another consultation with them on relocation options and schedule to the new resettlement site will be conducted again during this RAP implementation.

17.9.2 Relocation Strategy

Landless AHs will be given opportunities to decide on two relocation options during for their relocation. The two options are (1)-self relocation (individual household) with project assistance and (2)-group relocation to resettlement sites prepared by the project.

Self relocation option: For road section with landless AHs, landless AHs can have their own

relocation to any location they preferred. The cash assistance for land use will be provided them to make their own relocation arrangements. This cash assistance will be calculated based on the cost resettlement site per landless household, if it is prepared by the project.

Group relocation to resettlement sites prepared by the project: IRC-WG in collaboration with PRSC will acquire a piece of land for preparing a resettlement site based on consultation with landless AHs or their representatives. The location of the land will be as close as possible to their original land and will have access to nearby or on-site primary and secondary schools, health facilities and market facilities (see *Appendix 17-6: Resettlement Site selection check lists*). For this option, each landless AH will be relocated together in one resettlement site on a District basis, regardless commune of his/her existing location.

Under group relocation option, each landless AH will be provided a plot of land of 105 m² (7 m x 15 m) for free. After 5 consecutive years of living on the land, title to the land plot (secure tenure status) will be provided to the AHs. Similarly to private land owners who opt for land replacement, IRC will facilitate Ministry of Land Management, Urban Planning and Construction (MLMUPC) to provide the secure tenure status.

Prior to relocation of AHs, site development will ensure basic infrastructure including the following:

- (i) Source of water supply;
- (ii) Drainage system;
- (iii) Electricity to site and, as necessary, local distribution system; and
- (iv) Road access to and within the resettlement site.

All basic infrastructures at the resettlement site should be ready before AHs are asked to relocate there. Furthermore, impact on livelihood activities of all shop owners will be minimized. IRC-WG and PRSC-WG will consult with landless AHs about the relocation and civil work schedule including site development schedule during the DMS.

In addition to these, owners of affected private land can also opt for land replacement if they preferred and the land replacement will be equal size and located as close as possible to the existing location. All replacement lands will be provided for free with secure tenure status. IRC will facilitate Ministry of Land Management, Urban Planning and Construction (MLMUPC) to provide the secure tenure status.

17.9.3 Summary Cost of Resettlement Site Development

The land location and price were identified and surveyed by the consultant team during the project preparation, and the budget for resettlement site development was also estimated. Since the final selection of the land locations for Krakor, Baribour, Rolea B'ier and Kampong Tralach Districts will be done during the RAP implementation through consultation with landless AHs, the budget for relocation site development will be revised based on the actual land location

selection and its price.

(1) Resettlement Site at Krakor District

In Krakor District, PST Province, there are only 19 landless AHs. Each of them will be entitled to a land plot of 105 m² (7 m x 15 m) at the new resettlement site. Basic infrastructures at resettlement site such as access roads, latrines, electricity and deep well will be provided.

(2) Resettlement Site at Baribour District

In Baribour District, KCHN province, there are 27 landless AHs. The AHs will be encouraged to relocate to a new resettlement site with basic infrastructures such as access roads, latrines, drainages, and pumping wells, etc. Each landless AH will receive a land plot of 105 m² (7 m x 15 m), plus other basic infrastructures.

(3) Resettlement Site at Rolea B'ier District

As mentioned in entitlement matrix, the project has two options with regard to relocation: (i) self-relocation and (ii) project sponsored site, calling resettlement site (RS) with security of tenure and basic infrastructure. In Rolea B'ier District, KCHN province, there are 26 landless AHs, included one Khmer Islam (Cham) which is preferred for self-relocation option. The same as other RS, the AHs are encouraged to relocate to a new resettlement site with basic infrastructures such as access roads, latrines, drainages, and pumping wells, etc. Each landless AH will receive a land plot of 105 m² (7 m x 15 m).

(4) Resettlement Site at Kampong Tralach District

The RS will be covered for landless AHs coming from district of Kampong Tralach, Sameakki Mean Chey and Ponhea Leu. According to IOL data, among 39 landless AHs from the three districts, there are 9 Khmer Islam (Cham) households. The main purpose of the Khmer Islam is to stay closer to the Mosque where they used to often pray. Therefore, it is difficult to find a suitable place for them. The Best option for Khmer Islam, the project should provide them the cash assistance for self-relocations in their community.

17.10 Income Restoration Strategy

Restoring the incomes of AHs, whose means of livelihood has been disturbed or removed, is a high priority for RGC and JICA. This is of particular concern with respect to households whose livelihoods as well as property are lost as a result of the road improvement. Therefore, an Income Restoration Program (IRP) will be developed during resettlement implementation stage, after DMS is conducted. IRC will contract out to implement IRP (see *Appendix 17-3: Terms of Reference for Income Restoration Programs*).

Possible measures to restore livelihood depend on sort of income sources. The Vulnerable, Severely and Relocating AHs will be entitled to an IRP to restore income and livelihood as affected by the project. Thus, the contents of income restoration should be discussed based on

situations and need assessment of target groups. The result of SES and other surveys such as DMS can be utilized for the discussion to design an effective IRP.

17.10.1 Costs and Budget

The cost for resettlement will be covered by the government counterpart funds. Funds for the implementation of the RAP are part of the Project Cost. The land acquisition and resettlement cost has been estimated based on results of the IOL and the RCS conducted during the Project Study in January-April 2013.

17.10.2 Procedures for Flow of Funds

IRC will request the resettlement budget from MEF and the compensation amount will be transferred to relevant PDEF for releasing compensation and allowances to AHs. Payment of compensation and other entitlements will be in cash and will be distributed in public place (commune centre, school, pagoda etc.). The AHs will be notified through the village chiefs with regards to the schedule of payment of compensation and other entitlements.

17.10.3 Updating of the Compensation Rates

An RCS were conducted by local consultant during the project preparatory study as basis unit rate to estimate the cost for resettlement and land acquisition. Since compensation to AHs will be commenced in 2015 or 2016 (tentative schedule), the conducted RCS will be updated to reflect the current market price of affected property. The RCS updating will be conducted in parallel with the DMS.

17.10.4 Estimated Costs for Resettlement

The estimated costs for resettlement and land acquisition based on the RCS and the IOL during the project preparatory study is USD 10,037,464.10, which includes cash compensation and assistance for USD 8,882,711.60, external monitoring and income restoration of USD 266,481.35, administration cost of 5% equivalent to USD 444,135.58, and contingency of 5% or equivalent to USD 444,135.58. The Government will ensure timely provision of funds for resettlement costs and will meet any unforeseen obligations in excess of the resettlement budget in order to satisfy resettlement objectives. The resettlement estimated cost will be updated during the resettlement implementation based on the Detailed Measurement Survey (DMS) and the RCS.

17.11 Monitoring and Evaluation

17.11.1 Internal Monitoring

PMU-ES in close coordination with IRC will conduct an internal monitoring on resettlement

implementation. The monitoring will include progress reports, the status of the RAP implementation, information on location and numbers of people affected, compensation amounts paid by item, and assistance provided to AHs. The report of monitoring results will be prepared by MPWT and submitted to IRC and JICA on quarterly basis.

The following indicators will be monitored periodically by PMU-ES/MPWT:

- (i) Compensation and entitlements are computed at rates and procedures as provided in the approved RAP;
- (ii) AHs are paid as per agreed policy provided in the RAP by the Project authorities;
- (iii) Public information, public consultation and grievance redress procedures are followed as described in the approved RAP;
- (iv) Public facilities and infrastructure affected by the Project are restored; and
- (v) The transition between resettlement and civil works is smooth.

17.11.2 External Monitoring

The external monitor has the specific responsibility of studying and reporting on measures for income restoration and on social and economic situations of AHs particularly disrupted by the road works, including all households whose houses or shops and stalls are relocated. The external monitor also has the responsibility of reviewing potentials for job opportunities and training for AHs, including women and youth, which would be assisted by provincial authorities, and for which the Commune Resettlement Committees and local NGOs may provide additional support.

IRC will hire an External Monitoring Agency (EMA) to carry out external monitoring and post-implementation evaluation. The TOR for the engagement of the EMA is provided in *Appendix 17-2: Terms of Reference for External Monitoring Agency*. The external monitoring reports will be submitted to IRC on quarterly basis, and then IRC will forward to MPWT/PMU and JICA. The post evaluation will be conducted within one year after all resettlement activities are completed.

The EMA will assess (i) the achievement of resettlement objectives, (ii) changes in living standards and livelihoods, (iii) the restoration of the economic and social conditions of the AHs, (iv) the effectiveness, impact and sustainability of assistance measures, (v) the need for further mitigation measures, if any; and, (vi) identify strategic lessons for future policy formulation and planning. The EMA will also be responsible for checking the procedures and resolutions of grievances and complaints. The EMA may recommend further measures to be taken to redress unresolved grievances.


NATIONAL ROAD NO. 5 (SOUTH SECTION) IMPROVEMENT PROJECT
FINAL REPORT
(Volume II Appendix)
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APPENDIX 4-1

ROAD INVENTORY DATA


KP31~KP33 Inventory Data


	KP 31							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.7 m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	2.3 m		1:2		1.3 m		1:2	
	Land Use		Obstacles			Dist. from		
	Left Side		Shop		Shop		3.0 m	
	Right Side		Residence		Power Pole		3.0 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x			


	KP 32							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.5 m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	4.0 m		1:2		3.5 m		1:2	
	Land Use		Obstacles			Dist. from		
	Left Side		Swamp		House		4.0 m	
	Right Side		Residence		House		2.0 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x			

	KP 33							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.1 m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	4.3 m		1:2		3.9 m		1:1	
	Land Use		Obstacles			Dist. from		
	Left Side		Swamp		Pole		4.0 m	
	Right Side		Residence		House		2.0 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x			


KP34~KP36 Inventory Data


	KP 34							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.3m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	4.4m		1:2		4.3m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side		Swam		Power Pole		3.5 m		
Right Side		Swam		House		-		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
			x	x				


	KP 35							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.8m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	0.5m		1:8		0.5m		1:8	
	Land Use		Obstacles			Dist. from		
Left Side		Institute		Power Pole		6 m		
Right Side		Residence		House		23.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x				

	KP 36							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	-		10.2m			-		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	0.5m		1:8		0.5m		1:8	
	Land Use		Obstacles			Dist. from		
Left Side		Residence		Power Pole		5 m		
Right Side		Residence		House		7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x				


KP37~KP39 Inventory Data


		KP 37							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		-		10.3m		-			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		0.5m		1:8		2.1m		1:1	
		Land Use		Obstacles		Dist. from			
Left Side		Residence		Power Pole		4 m			
Right Side		Commercial		Shop		8 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				


		KP 38							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		3.5		8.6m		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
Left Side		Commercial		Power Pole		5 m			
Right Side		Institute		Temple		4 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x					

		KP 39							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.0		7.9m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
Left Side		Commercial		Shop		3 m			
Right Side		Commercial		Shop		1 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x						


KP40~KP42 Inventory Data


		KP 40							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5m		10.1		2.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.0m		1:2		1.0m		1:2	
		Land Use		Obstacles			Dist. from		
Left Side		Paddy		-		-			
Right Side		Paddy		Power Pole		20 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x	x			


		KP 41							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		8 m		1.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.7m		2:3		1.9m		2:5	
		Land Use		Obstacles			Dist. from		
Left Side		Swamp		-		-			
Right Side		Swamp		Power Pole		19 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				

		KP 42							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.5		9.5m		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.0m		1:1		1.2m		1:2	
		Land Use		Obstacles			Dist. from		
Left Side		Commercial		Shop		11m			
Right Side		Commercial		Power Pole		13m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x	x			


KP43~KP45 Inventory Data


		KP 43						
		Road Width						
		Shoulder (L)		Carriageway			Shoulder (R)	
		2.0		10.3			2.5	
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		Level		-		Level		-
		Land Use		Obstacles			Dist. from	
		Left Side		House		House		5.5m
		Right Side		Paddy		Power Pole		14.5m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		Maybe	


		KP 44						
		Road Width						
		Shoulder (L)		Carriageway			Shoulder (R)	
		2.5		9.9m			2.5	
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		0.5m		1:2		0.8m		1:2
		Land Use		Obstacles			Dist. from	
		Left Side		Paddy		-		-
		Right Side		Farm		Power Pole		13m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
			x	x	x		Maybe	

		KP 45						
		Road Width						
		Shoulder (L)		Carriageway			Shoulder (R)	
		2.0		9.9m			3.0	
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		Level		-		Level		-
		Land Use		Obstacles			Dist. from	
		Left Side		Paddy		Power Pole		9.5 m
		Right Side		Paddy		Power Pole		15m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x		Maybe	


KP46~KP48 Inventory Data


		KP 46					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		9.3		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Slope (L)
		2.0m		-	1.0m		1:2
		Land Use		Obstacles		Dist. from	
Left Side		Factory		Fence	8.5m		
Right Side		Swamp		Power Pole	14.5m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
			x	x	x		


		KP 47					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.5		9.3m		2.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Slope (L)
		Level		-	Level		-
		Land Use		Obstacles		Dist. from	
Left Side		Factory		Factory	23.5m		
Right Side		Factory		Power Pole	16m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x			x

		KP 48					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.5		9.8m		0.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Slope (L)
		Level		-	Level		-
		Land Use		Obstacles		Dist. from	
Left Side		Residence		House	5.5 m		
Right Side		Residence		House	5.5m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x			x	x		x


KP49~KP51 Inventory Data


	KP 49								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	2.0		9.2			0.5			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Slope (L)		
	2.8		1:2		0.5m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side		Paddy			-			-	
Right Side		Farm			Fence		16.5m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				


	KP 50								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	2.5		7.6m			2.5			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Slope (L)		
	1.0m		1:3		1.0m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side		Paddy			-			-	
Right Side		Residence			Power pole		14 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
			x	x	x				

	KP 51								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	1.5		9.0m			1.0			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Slope (L)		
	1.0m		1:2		1.0m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side		Paddy			-			-	
Right Side		Paddy			Power Pole		19.5m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x		x			


KP52~KP54 Inventory Data


		KP 52							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.0		9.7		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		0.6m		1:1	
		Land Use		Obstacles		Dist. from			
		Left Side		Residence		House		6m	
		Right Side		School		Power Pole		3m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x					


		KP 53							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.0		9.3m		2.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
		Left Side		Commercial		House		5 m	
		Right Side		commercial		Power Pole		4.5m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x		x			

		KP 54							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.5		9.8m		2.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
		Left Side		Residence		House		14.5 m	
		Right Side		Residence		Power Pole		5 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x		x	x	x				


KP55~KP57 Inventory Data


	KP 55							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	3.0		10.1			2.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	level		-		Level		-	
	Land Use		Obstacles			Dist. from		
Left Side				Residence		House	12m	
Right Side				Residence		Power pole	19.5m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
			x	x	x			


	KP 56							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	3.0		9.6m			1.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	0.5m		1:2		0.5m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side				Factory		Fence	11m	
Right Side				Paddy		Power Pole	10m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x	x	x	

	KP 57							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	3.0		9.9m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	Level		-		Level		-	
	Land Use		Obstacles			Dist. from		
Left Side				Residence		Fence	9 m	
Right Side				Residence		House	9 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		x	


KP58~KP60 Inventory Data


	KP 58							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		9.9			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	3.0m		1:3		2.0m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Swamp			-			
Right Side		Residence		Power Pole		19 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x			


	KP 59							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	3.0		9.9m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	Level		-		0.5m		1:4	
	Land Use		Obstacles			Dist. from		
Left Side		University			House		10 m	
Right Side		Residence		Fence		9m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		Maybe	

	KP 60							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.5		9.9m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Slope (L)	
	0.5m		1:4		0.5m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side		Residence			Fence		10 m	
Right Side		Farm		Power Pole		19.5m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x		Maybe	


KP61~KP63 Inventory Data


		KP 61							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.0		9.9m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.5m		1:1		2.0m		1:1	
		Land Use		Obstacles		Dist. from			
Left Side		Swamp		-		-			
Right Side		Paddy		Power Pole		19 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				


		KP 62							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.9m		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.5m		1:1		2.0		1:1	
		Land Use		Obstacles		Dist. from			
Left Side		Paddy		-		-			
Right Side		Paddy		Power Pole		20 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				

		KP 63							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.0		10.3m		1.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.8m		1:2		1.5m		1:2	
		Land Use		Obstacles		Dist. from			
Left Side		Paddy		-		-			
Right Side		Paddy		Power Pole		20 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x				


KP64~KP66 Inventory Data


		KP 64							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		10.2m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		0.8m		1:5		0.5m		1:3	
		Land Use		Obstacles		Dist. from			
Left Side		Swamp		-		-			
Right Side		Paddy		Power Pole		18.5 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x			x		


		KP 65							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		10.4m		1.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.0m		1:2		1.0m		1:2	
		Land Use		Obstacles		Dist. from			
Left Side		Paddy		-		-			
Right Side		Swamp		Power Pole		20m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x		x	x		

		KP 66							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		10.3m		1.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		0.5m		1:2		1.0m		1:2	
		Land Use		Obstacles		Dist. from			
Left Side		Paddy		Fence		6 m			
Right Side		Paddy		Power Pole		20m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x		x	x	x		Maybe		


KP67~KP69 Inventory Data


		KP 67						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		2.0		10.6m		3.0		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		0.5m		1:3		Level		-
		Land Use		Obstacles		Dist. from		
		Left Side		Paddy		-		-
		Right Side		Paddy		Fence		6 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		x	


		KP 68						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		2.0		9.5 m		1.0		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		3.5m		1:3		2.5m		1:2
		Land Use		Obstacles		Dist. from		
		Left Side		Swamp		-		-
		Right Side		Swamp		Power Pole		21 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x		x		

		KP 69						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		1.5		9.3m		1.0		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Slope (L)
		0.8m		1:2		0.7m		1:2
		Land Use		Obstacles		Dist. from		
		Left Side		Paddy		-		-
		Right Side		Paddy		Power Pole		20.5m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		x	


KP70~KP72 Inventory Data


		KP 70							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.7m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		0.5m		1:4		0.5m		1:4	
		Land Use		Obstacles		Dist. from			
Left Side		Swamp		-		-			
Right Side		Paddy		Power Pole		20.5m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x		x	x	x	x	x		


		KP 71							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.5m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		0.5m		1:5		0.5m		1:5	
		Land Use		Obstacles		Dist. from			
Left Side		Paddy		Church		20.5 m			
Right Side		Swamp		Power Pole		18.5 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x	x	x		

		KP 72							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		2.0		9.2m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
Left Side		Farm		Fence		8 m			
Right Side		House		Power Pole		19 m			
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x		x	x	x		x		


KP73~KP75 Inventory Data

		KP 73							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.9m		2.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
		Left Side		Residence		Fence		7 m	
		Right Side		Residence		Factory		8 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x		x		


		KP 74							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.0		9.3m		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		1.5m		1:6		1.0m		1:4	
		Land Use		Obstacles		Dist. from			
		Left Side		Paddy		-		-	
		Right Side		Private Property		Power Pole		18 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x	x	x		x		


		KP 75							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.2m		1.5			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		0.5m		1:4	
		Land Use		Obstacles		Dist. from			
		Left Side		Residence		Church		20 m	
		Right Side		Residence		Power Pole		20 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x		x	x	x		x		


KP76 Inventory Data

		KP 76							
		Road Width							
		Shoulder (L)		Carriageway		Shoulder (R)			
		1.5		9.5m		1.0			
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Slope (L)	
		Level		-		Level		-	
		Land Use		Obstacles		Dist. from			
		Left Side		Tree Garden		Fence		6 m	
		Right Side		Nothing		Power Pole		20 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
			x	x	x		x		


KP77~KP79 Inventory Data


		KP 77						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		2.5		9.8m		1.5		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		Level		-		Level		-
		Land Use		Obstacles		Dist. from		
		Left Side		Paddy		-		-
		Right Side		Paddy		Power Pole		20 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x		x	


		KP 78						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		2.0		9.8m		1.5		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		Level		-		Level		-
		Land Use		Obstacles		Dist. from		
		Left Side		Private Property		Fence		19.5 m
		Right Side		Farm		Power Pole		21.5 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x			

		KP 79						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		1.5		10.0 m		1.0		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		Level		-		Level		-
		Land Use		Obstacles		Dist. from		
		Left Side		Residence		Power Pole (LV)		16.5 m
		Right Side		Residence		Fence		8 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x		x	x	x			


KP80~KP82 Inventory Data


		KP 80							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.5		9.5m			1.0		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Embank (L)	
		Level		-		Level		-	
		Land Use		Obstacles			Dist. from		
		Left Side		Residence		Power Pole		4 m	
		Right Side		Residence		House		8 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
		x		x	x				


		KP 81							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.5		10.6m			1.0		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Embank (L)	
		Level		-		Level		-	
		Land Use		Obstacles			Dist. from		
		Left Side		Residence		Power Pole		5 m	
		Right Side		Residence		Power Pole		9.5 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
		x		x	x				

		KP 82							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.5		10.2m			1.5		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)		Embank (L)	
		1.7m		1:2		1.5m		1:2	
		Land Use		Obstacles			Dist. from		
		Left Side		Paddy		-		-	
		Right Side		Paddy		Power Pole		15 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x			x					


KP83~KP85 Inventory Data


		KP 83						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		1.5		9.7m		1.0		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		2.4m		1:2		2.2m		1:3
		Land Use		Obstacles		Dist. from		
Left Side		Paddy		-		-		
Right Side		Paddy		Power Pole		14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
		x		x				


		KP 84						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		2.0		10.6m		1.5		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		0.7m		1:4		1.0m		1:4
		Land Use		Obstacles		Dist. from		
Left Side		Residence		House		21 m		
Right Side		Private Property		Power Pole		14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
				x				

		KP 85						
		Road Width						
		Shoulder (L)		Carriageway		Shoulder (R)		
		1.5		10.6m		1.5		
		Road Height						
		Embank (L)		Slope (L)		Embank (R)		Embank (L)
		0.5m		1:4		0.5m		1:4
		Land Use		Obstacles		Dist. from		
Left Side		Residence		House		26 m		
Right Side		Residence		Power Pole		14 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
		x	x	x				


KP86~KP88 Inventory Data


		KP 86					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		10.5m		1.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.0m		1:3	1.0m		1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		-		-	
Right Side		Private Property		Power Pole		15 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
				x	x		


		KP 87					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		3.0		10.2m		3.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		Level		-	Level		-
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole		8 m	
Right Side		Residence		Power Pole		4 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
				x	x		

		KP 88					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		11.0m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		Level		-	Level		-
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole		2 m	
Right Side		Commercial		Power Pole		1 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x	x		x


KP89~KP91 Inventory Data


	KP 89							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		10.0m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	Level		-		Level		-	
	Land Use		Obstacles			Dist. from		
	Left Side		Residence		Power Pole		4 m	
	Right Side		Residence		Power Pole		2 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x		x	x			


	KP 90							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		13.1m			Sidewalk		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	Level		-		Level		-	
	Land Use		Obstacles			Dist. from		
	Left Side		Commercial		Power Pole		2 m	
	Right Side		Commercial		Private Property		-	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x		x		

	KP 91							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		9.8m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	3.3m		1:2		3.2m		1:1	
	Land Use		Obstacles			Dist. from		
	Left Side		Commercial		Power Pole		4 m	
	Right Side		Commercial		Shop		4 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x	x		


KP92~KP94 Inventory Data


								KP 92									
								Road Width									
								Shoulder (L)		Carriageway				Shoulder (R)			
								2.5		9.8m				1.5			
								Road Height									
								Embank (L)		Slope (L)		Embank (R)		Embank (L)			
								Level		-		Level		-			
								Land Use		Obstacles				Dist. from			
								Left Side				Residence		Power Pole		1 m	
								Right Side				Residence		Fence		4 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow										
	x	x		x		x											


								KP 93									
								Road Width									
								Shoulder (L)		Carriageway				Shoulder (R)			
								1.5		7.8m				1.5			
								Road Height									
								Embank (L)		Slope (L)		Embank (R)		Embank (L)			
								1.0m		1:3		1.1m		1:3			
								Land Use		Obstacles				Dist. from			
								Left Side				Residence		Fence		11 m	
								Right Side				Residence		Fence		12 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow										
	x			x		x											

								KP 94									
								Road Width									
								Shoulder (L)		Carriageway				Shoulder (R)			
								1.5		7.7m				1.5			
								Road Height									
								Embank (L)		Slope (L)		Embank (R)		Embank (L)			
								1.0m		1:3		1.7m		1:2			
								Land Use		Obstacles				Dist. from			
								Left Side				Private Property		Fence		10.5 m	
								Right Side				Residence		Fence		6 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow										
	x			x	x	x											


KP95~KP97 Inventory Data


		KP 95					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.5m		1:2	1.8m		1:2
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	8 m		
Right Side		Residence		Fence	18 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x		x	x	x	x	


		KP 96					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.2m		1:3	1.3m		1:2
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	10.5 m		
Right Side		Paddy		Power Pole	18.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x			x		x	

		KP 97					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.8m		1.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.0m		1:3	1.1m		1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9.5 m		
Right Side		Paddy		Power Pole	20.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x					x	


KP98~KP100 Inventory Data


		KP 98					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.3m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:3		0.5m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Advertisement	6 m		
Right Side		Residence		House	13 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x		x	x	x	x	


		KP 99					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.5m		1:4		1.1m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	11 m		
Right Side		Paddy		Power Pole	15 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x			x		x	

		KP 100					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.4m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.3m		1:2		1.1m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	7.5 m		
Right Side		Residence		Power Pole	11 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x	x	x	x	


KP101~KP103 Inventory Data


		KP 101					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.7m		1:3		0.6m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	7 m		
Right Side		Residence		Power Pole	13 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x		x	


		KP 102					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.7m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:3		1.5m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Fence	18 m		
Right Side		Residence		Power Pole	18.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x	x		x	

		KP 103					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.7m		2.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.5m		1:5		0.6m	1:5
		Land Use		Obstacles		Dist. from	
Left Side		Farm		Fence	30 m		
Right Side		Paddy		Power Pole (LV)	19.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x		x			x	


KP104~KP106 Inventory Data


		KP 104					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		0.7m		1:5	0.8m		1:3
		Land Use		Obstacles		Dist. from	
Left Side		Farm		Power Pole (LV)	6 m		
Right Side		Paddy		Fence	14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x			x	


		KP 105					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.8m		1.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.0m		1:4	0.5m		1:4
		Land Use		Obstacles		Dist. from	
Left Side		Private Property		Power Pole (LV)	9.5 m		
Right Side		Residence		House	13 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x		x	Maybe

		KP 106					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.9m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		2.7m		1:3	3.2m		1:3
		Land Use		Obstacles		Dist. from	
Left Side		Swamp		Power Pole (LV)	7 m		
Right Side		Swamp		Power Pole	22 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x		x	x	


KP107~KP109 Inventory Data


	KP 107							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.4m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	2.0m		1:3		1.8m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Swamp		Power Pole (LV)		7 m		
Right Side		Swamp		Power Pole		24.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x			x		


	KP 108							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.0		7.7m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.5m		1:3		0.8m		1:6	
	Land Use		Obstacles			Dist. from		
Left Side		Farm		Power Pole (LV)		9 m		
Right Side		Residence		House		8 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x	x		

	KP 109							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		7.7m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.7m		1:4		0.9m		1:5	
	Land Use		Obstacles			Dist. from		
Left Side		Residence		Power Pole (LV)		6 m		
Right Side		Residence		House		13 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
		x	x			x		


KP110~KP112 Inventory Data


		KP 110					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.5m		1:5		0.8m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Private Property		Power Pole (LV)	10.5 m		
Right Side		Residence		Power Pole	21.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x			x	


		KP 111					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		8.4m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.8m		1:3		0.5m	1:5
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	9 m		
Right Side		Residence		Power Pole	18 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	

		KP 112					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.9m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.8m		1:5		0.5m	1:5
		Land Use		Obstacles		Dist. from	
Left Side		Private Property		Power Pole (LV)	9 m		
Right Side		Private Property		Power Pole	24 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x		x	


KP113~KP115 Inventory Data


	KP 113								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	1.0		8.1m			1.0			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Embank (L)		
	1.5m		1:2		1.5m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side				Paddy		Power Pole (LV)		9 m	
Right Side				Paddy		-		-	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x		x	x	x			


	KP 114								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	1.5		7.5m			2.0			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Embank (L)		
	2.0m		1:2		1.8m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side				Paddy		Power Pole (LV)		9 m	
Right Side				Paddy		-		-	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x		x	x			

	KP 115								
	Road Width								
	Shoulder (L)		Carriageway			Shoulder (R)			
	1.5		7.7m			2.0			
	Road Height								
	Embank (L)		Slope (L)		Embank (R)		Embank (L)		
	1.5m		1:2		1.7m		1:2		
	Land Use		Obstacles			Dist. from			
Left Side				Paddy		Power Pole (LV)		6 m	
Right Side				Residence		Power Pole		20.5 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x		x	x			


KP116~KP118 Inventory Data


	KP 116							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		8.0m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.6m		1:2		1.6m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side				Paddy		Power Pole (LV)	8.5m	
Right Side				Paddy		Power Pole	22.5m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x			x		


	KP 117							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.7m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.2m		1:4		2.2m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side				Commercial		Power Pole (LV)	6 m	
Right Side				Residence		Power Pole	25.5 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x		x		x		

	KP 118							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.6m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.8m		1:1		1.3m		1:1	
	Land Use		Obstacles			Dist. from		
Left Side				Paddy		Power Pole (LV)	9 m	
Right Side				Paddy		House	8 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x	x		


KP119~KP121 Inventory Data

	KP 119							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.6m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.0m		1:2		1.0m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		7m		
Right Side		Paddy		Power Pole		23m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x			x		


	KP 120							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.7m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.2m		1:3		1.2m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		8 m		
Right Side		Paddy		Power Pole		23.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x			x		


	KP 121							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		7.4m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.0m		1:3		0.7m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Residence		Power Pole		8 m		
Right Side		Residence		House		7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x	x	x	x		


KP122

		KP 122					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.8m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.9m		1:3		1.1m	1:3
Land Use		Obstacles		Dist. from			
Left Side		Residence		Power Pole	7 m		
Right Side		Residence		House	13.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x		x	x	


KP123~KP125 Inventory Data


		KP 123					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		Level		-		0.7 m	1:1
		Land Use		Obstacles		Dist. from	
		Left Side		Town		Power Pole	8 m
		Right Side		Town		Power Pole	5 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 124					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.6 m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		Level		-		Level	-
		Land Use		Obstacles		Dist. from	
		Left Side		Town		Fence	5 m
		Right Side		Town		Fence	5 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x			x	

		KP 125					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.3 m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.2 m		1:3		1.4 m	1:2
		Land Use		Obstacles		Dist. from	
		Left Side		Residence		Power Pole	5.5 m
		Right Side		Paddy		House	10.5 m
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x		x	x	


KP126~KP128 Inventory Data


		KP 126					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.7m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:3		1.0m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	10 m		
Right Side		Paddy		House	10 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x	x			x	


		KP 127					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.9m		1:2		0.8m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9.5 m		
Right Side		Paddy		Fence	5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	

		KP 128					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.2m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.9m		1:2		1.2m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		House	13 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	x


KP129~KP131 Inventory Data


	KP 129							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.0		7.1m			1.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.8m		1:2		1.0m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side				Paddy		Power Pole	6.5 m	
Right Side				Paddy		House	37 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x			x	x	x	


	KP 130							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		7.6m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.7m		1:3		0.9m		1:4	
	Land Use		Obstacles			Dist. from		
Left Side				Residence		Power Pole (LV)	10 m	
Right Side				Residence		Fence	7 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x	x		

	KP 131							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.8m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.5m		1:3		0.8m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side				Duck Farm		Power Pole (LV)	6 m	
Right Side				Duck Farm		House	8 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x			x		


KP132~KP134 Inventory Data


								KP 132							
								Road Width							
								Shoulder (L)		Carriageway				Shoulder (R)	
								1.0		7.6m				1.0	
								Road Height							
								Embank (L)		Slope (L)		Embank (R)		Embank (L)	
								0.7m		1:3		0.9m		1:2	
								Land Use			Obstacles			Dist. from	
								Private Property			Power Pole (LV)			8 m	
								Right Side			Private Property			House	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow								
	x	x	x		x	x									


								KP 133							
								Road Width							
								Shoulder (L)		Carriageway				Shoulder (R)	
								1.5		7.4m				1.0	
								Road Height							
								Embank (L)		Slope (L)		Embank (R)		Embank (L)	
								1.2m		1:3		1.6m		1:2	
								Land Use			Obstacles			Dist. from	
								Temple			Power Pole (LV)			9 m	
								Right Side			Residence			House	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow								
	x	x	x			x									

								KP 134							
								Road Width							
								Shoulder (L)		Carriageway				Shoulder (R)	
								1.0		8.1m				1.5	
								Road Height							
								Embank (L)		Slope (L)		Embank (R)		Embank (L)	
								1.0m		1:3		1.6m		1:3	
								Land Use			Obstacles			Dist. from	
								Private Property			Power Pole (LV)			8 m	
								Right Side			Private Property			House	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow								
	x	x	x		x										


KP135~KP137 Inventory Data


	KP 135							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		8.2m			1.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.7m		1:4		0.7m		1:5	
	Land Use		Obstacles			Dist. from		
Left Side		Farm		Power Pole (LV)		9 m		
Right Side		Farm		House		35 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x					


	KP 136							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		8.2m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.2m		1:3		2.4m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		9 m		
Right Side		Paddy		House		30.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x			

	KP 137							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		7.9m			1.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.8m		1:2		0.6m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		8 m		
Right Side		Paddy		House		36 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x		x	


KP138~KP140 Inventory Data


		KP 138					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.9m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.0m		1:2	1.1m		1:4
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	22 m		
Right Side		Residence		House	12 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x			x		


		KP 139					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		8.0m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		0.7m		1:3	1.0m		1:2
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	8 m		
Right Side		Residence		House	14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x		

		KP 140					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.9m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		0.8m		1:3	1.1m		1:4
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		-	-		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x				Maybe


KP141~KP143 Inventory Data


		KP 141					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.1m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.3m		1:3		1.0m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Town		Power Pole (LV)	9 m		
Right Side		Town		Shop	7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 142					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.6m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.2m		1:2		1.3m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	9 m		
Right Side		Residence		Fence	11 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x				x	

		KP 143					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.2m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:3		0.9m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		House	14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x				x	


KP144~KP146 Inventory Data


		KP 144					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.3m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.7m		1:2		1.0m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		-	-		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 145					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.2m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:3		1.0m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Private Property		Power Pole (LV)	24 m		
Right Side		Farm		Fence	26 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	

		KP 146					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.0m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.6m		1:5		0.7m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		Shop	6 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x	x	x	x


KP147~KP149 Inventory Data


		KP 147					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.8m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.7m		1:2		1.3m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole	8 m		
Right Side		Private Property		House	20.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 148					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.2m		2.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.1m		1:3		1.0m	1:4
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		Fence	12 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x		

		KP 149					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		8.1m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.2m		1:2		1.5m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		Fence	12 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x			x		


KP150~KP152 Inventory Data


	KP 150							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		8.0m			1.5		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.5m		1:2		1.5m		1:2	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		9.5 m		
Right Side		Paddy		Fence		10.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x			


	KP 151							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	2.0		8.0m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	0.5m		1:6		0.5m		1:6	
	Land Use		Obstacles			Dist. from		
Left Side		Residence		Power Pole (LV)		8 m		
Right Side		Residence		Power Pole		14.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
	x	x	x		x			

	KP 152							
	Road Width							
	Shoulder (L)		Carriageway			Shoulder (R)		
	1.5		8.1m			2.0		
	Road Height							
	Embank (L)		Slope (L)		Embank (R)		Embank (L)	
	1.2m		1:3		1.0m		1:3	
	Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		7 m		
Right Side		Paddy		Shop		10m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow	
			x		x	x		


KP153~KP155 Inventory Data


		KP 153					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.3m		2.5	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		0.6m		1:4	1.2m		1:4
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	6 m		
Right Side		Paddy		Power Pole	7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 154					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.7m		2.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		Level		-	Level		-
		Land Use		Obstacles		Dist. from	
Left Side		Town		Power Pole (LV)	7 m		
Right Side		Town		Power Pole	7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
						x	

		KP 155					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.6m		1.0	
		Road Height					
		Embank (L)		Slope (L)	Embank (R)		Embank (L)
		1.2m		1:3	1.2m		1:3
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Shop	5 m		
Right Side		Residence		Power Pole	22.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


KP156~KP158 Inventory Data


		KP 156					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.1m		1:2		0.5m	1:1
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Power Pole (LV)	7 m		
Right Side		Residence		Power Pole	27 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x	x	x	x	x


		KP 157					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.3m		1.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.0m		1:1		0.7m	1:1
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		Power Pole	22 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	x

		KP 158					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.1m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.8m		1:1		0.7m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Farm		Power Pole (LV)	8 m		
Right Side		Paddy		Gas Station	15m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	x


KP159~KP171 Inventory Data


		KP 159					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.7m		1:2		0.8m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		-	-		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x		x


		KP 160					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.7m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.2m		1:3		0.7m	1:1
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9.5 m		
Right Side		Paddy		Power Pole (LV)	8 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	

		KP 161					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.4m		1.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.5m		1:2		1.5m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Residence		House	39 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


KP162~KP164 Inventory Data


		KP 162							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.0		7.3m			1.5		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)	Embank (L)		
		0.8m		1:2		1.1m	1:2		
		Land Use		Obstacles			Dist. from		
		Left Side		Paddy		Power Pole (LV)		9 m	
		Right Side		Paddy		House		32 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x		x				


		KP 163							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.0		7.6m			1.5		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)	Embank (L)		
		1.0m		1:3		1.0m	1:2		
		Land Use		Obstacles			Dist. from		
		Left Side		Paddy		Power Pole (LV)		8 m	
		Right Side		Paddy		House		34 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x		x	x	Maybe		

		KP 164							
		Road Width							
		Shoulder (L)		Carriageway			Shoulder (R)		
		1.5		7.6m			1.0		
		Road Height							
		Embank (L)		Slope (L)		Embank (R)	Embank (L)		
		0.6m		1:2		0.7m	1:2		
		Land Use		Obstacles			Dist. from		
		Left Side		Paddy		Power Pole (LV)		8 m	
		Right Side		Paddy		House		36 m	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow		
	x	x	x		x	x	Maybe		


KP165~KP167 Inventory Data


		KP 165					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.2m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.2m		1:2		0.9m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		Shop	23 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	


		KP 166					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.6m		1.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.6m		1:2		1.1m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	9 m		
Right Side		Paddy		Fence	20 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x			x		

		KP 167					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.5		7.5m		2.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.5m		1:5		0.5m	1:2
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		House	34.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x	x	x


KP168~KP170 Inventory Data

		KP 168					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.6m		1.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.5m		1:2		0.2m	1:5
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Shop	13 m		
Right Side		Paddy		Fence	18.5 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x	x	x		x		

		KP 169					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		2.0		7.4m		1.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.7m		1:2		0.8m	1:1
		Land Use		Obstacles		Dist. from	
Left Side		Residence		Shop	9 m		
Right Side		Paddy		Shop	7 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
	x		x		x		

		KP 170					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		7.3m		0.5	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		0.2m		1:8		0.7m	1:3
		Land Use		Obstacles		Dist. from	
Left Side		Paddy		Power Pole (LV)	8 m		
Right Side		Paddy		House	29 m		
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
			x				

KP171

		KP 171					
		Road Width					
		Shoulder (L)		Carriageway		Shoulder (R)	
		1.0		10.3m		2.0	
		Road Height					
		Embank (L)		Slope (L)		Embank (R)	Embank (L)
		1.6m		1:3		1.5m	1:4
Land Use		Obstacles			Dist. from		
Left Side		Paddy		Power Pole (LV)		9 m	
Right Side		Paddy		-		-	
Road Condition	Crack	Pothole	Depress	Flush	Rutting	Peel Off	Overflow
		x		x		x	

