

Environmental Monitoring Report

Semi-Annual Report (January to June 2015)
August 2015

CAMBODIA: Provincial Roads Improvement Project

Prepared by Korea Consultants International in association with Dainichi Consultant Inc., Sambo Engineering Co., Ltd. and Hankuk Engineering Consultants, and in Sub-consultancy with Moha Engineering & Consulting Co., Ltd., SBK, KACE and SAWAC for the Ministry of Public Works and Transport, the Kingdom of Cambodia, and the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 1 August 2015)

Currency unit	–	riel (KR)
KR1.00	=	\$0.000243
\$1.00	=	KR4,120

NOTE

In this report, "\$" refers to US dollars unless otherwise stated.

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KINGDOM OF CAMBODIA



MINISTRY OF PUBLIC WORKS AND TRANSPORT

PROVINCIAL ROADS IMPROVEMENT PROJECT
ADB LOAN 2839-CAM (SF)/8254-CAM (SCF)

**Consulting Services for
Detailed Design and Implementation Supervision (DDIS)**

SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT

Covering Period from January to June 2015

August 2015



Korea Consultants International

In association with

**Dainichi Consultant Inc., Sambo Engineering Co., Ltd. and
Hankuk Engineering Consultants**

In Sub-consultancy with

Moha Engineering & Consulting Co., Ltd., SBK, KACE and SAWAC

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ABBREVIATIONS

ADB	Asian Development Bank
AP	(Project) Affected Persons
BOD	biological oxygen demand
CBF	Cross Border Facility
CEMP	Contractor Environmental Management Plan
COI	Corridor of Impact
CW	Civil Work
DBST	Double Bituminous Surface Treatment
DDIS	Detailed Design and Implementation Supervision
EA	Executive Agency
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
GoC	Government of Cambodia
GGF	Good Governance Framework
GRM	Grievance Redress Mechanism
IEE	Initial Environmental Examination
KCI	Korea Consultants International
KEXIM	Korea Export and Import Bank
MCFA	Ministry of Culture and Fine Arts
MEF	Ministry of Economy and Finance
MOU	Memorandum of Understanding
MOE	Ministry of Environment
MRD	Ministry of Rural Development
MPWT	Ministry of Public Works and Transport
MT	motorized transport
NDF	Nordic Development Fund
NGO	Non-government Organization
NR	National Road
NTFP	non-timber forest products
PDOE	Provincial Department of Environment
PDRD	Provincial Department of Rural Development
PMU	Project Management Unit
PR	Provincial Road
PRIP	Provincial Road Improvement Project
PPE	Personal Protective Equipment
PPTA	Project Preparation Technical Assistance
RGC	Royal Government of Cambodia
ROW	Right of Way
RP	Resettlement Plan
SBST	Single Bituminous Surface Treatment
SDR	Special Drawing Right
SEO	Social and Environment Office
SEU	Social and Environment Unit
SPS	ADB's Safeguard Policy Statement
STD	Sexually Transmitted Disease
TOR	Terms of Reference
UNESCO	United Nations Educational Scientific and Cultural Organization
WB	World Bank
UXO	Unexploded Ordnance

EXECUTIVE SUMMARY

1. Asian Development Bank (ADB) approved Loan (ADB loan No. 2839-CAM (SF)/8254- CAM (SCF), approved on 16 December 2011) and Grant 0278-CAM for Improvement of Provincial Roads (PRIP) in southeastern and mid-west province in Cambodia as requested by the Government of Cambodia. This Project is a priority project in the Government's key infrastructure development agenda as it provides all-year access to provincial and rural agricultural communities of Prey Veng and Svay Rieng provinces of southeastern Cambodia, and Kampong Chhnang and Kampong Speu province in the mid-west of Cambodia.
2. The Provincial Roads Improvement Project (PRIP) will be implemented for a Contract period of 36 months, from September 1st, 2014 and will be completed at the ends of August in 2017. There are five (5) Contract packages to be implemented under the project. These are: CW-A: Improvement of NR13 (62.4km); CW-B1: Improvement of PR314D (25.5km); CW-B2: Prey Var CBF; and CW-C: Improvement of NR53, PR150B and PR151B (70.63km), which are under Civil Works Output. The remaining contract, on the other hand, CW-D will be awarded under Improved Climate Resilience Output.
3. Amount of the five outputs of the project, the 1st output is under construction i.e.: (i) rehabilitate 87.9 km of road to climate resilient paved condition National Road (NR) 13 connecting NRs 8 and 1, between Komchay Mear and Prosot, and NR 314D from Prosot to the border of Vietnam at Prey Var, Svay Rieng; (ii) construct a new CBF at Prey Var, Svay Rieng; and (iii) rehabilitate 70.6 km of road to climate resilient paved condition; NR 150B from Ta Ches to Tek Phos, NR 53 from Khlong Popok to Kampong Speu border, and from there to Amleang (NR 151B). This output includes associated detailed design and implementation supervision (DDIS) consulting services, and land acquisition and resettlement required for the project roads and the CBF.
4. The Project aims to rehabilitate of national/provincial roads in Kampong Chhnang, Kampong Speu, Prey Vang, and Svay Rieng provinces to climate resilient paved condition of provincial roads in the southeast and rural roads in the mid-west. The rehabilitation program will provide a safer, cost-effective provincial road network with all-year access from national road network to markets and other social services for provincial centers of southeastern and mid-western Cambodia. A new cross border facility (CBF) will be constructed at Prey Var, Svay Rieng to facilitate efficient cross border transport and trade between Cambodia and Vietnam. The Project will support a sustainable road maintenance regime in the Ministry of Public Works and Transport (MPWT), community-based road safety measures, HIV/AIDS and human trafficking prevention program (HHTPP), and climate resilient measures.
5. The Subprojects at the southeast (Prey Veng and Svay Rieng provinces), the roads will be upgraded to DBST¹ road, 11m width with 10m carriage way & 0.5m shoulder in both sides (see in Cross Section of NR-13 & PR314D). However, the Subprojects at the mid-west (Kampong Chhnang and Kampong Speu provinces), the roads will be upgraded to SBST² road, 8m width with 6m carriage way & 1m shoulder in both sides (Cross Section of NR-53,

¹ DBST: Double Bituminous Surface Treatment

² SBST: Single Bituminous Surface Treatment

PR-150B & PR-151B). The project is also reconstruction of bridges and installation of drainage structures such as box culverts and pipe culverts. The Project is classified environment category B and an initial environmental examination (IEE) was conducted as part of project preparation in accordance with ADB's Safeguard Policy Statement of 2009 (ADB SPS).

6. Field monitoring and interviews were conducted on 27-31 July 2015, to inspect ongoing construction works by the two Contractors one for CW-A, CW-B1 and the other for CW-C by National Environmental Specialist and accompanied by the SEO of MPWT, the DDIS consultants and the contractor's representatives. This report covers the period from January to June 2015, during construction stage of the subprojects of PRIP.

7. Some of the mitigation measures being implemented by the Contractors are: use of approved borrow pit areas, contractors are trying to minimize the impact to nearby structures as much as they could. During that time, regular sprinkling of water on access roads, installation of pipe culverts structures were observed at CW-A: NR13 in Svay Rieng province, provision of PPE to workers and facilities such as kitchen, communication, toilet, bathroom, potable water, installation of warning/safety signs and hiring of unskilled workers including women .

8. As also observed, the project has no significant impacts on the environment and people as well. The implementation of the above mitigation measures reduces the occurrence of the following negative impacts: Loss of trees (during site clearing and quarrying of construction materials), damage to existing structures, risk of land mine or UXO, dust generation control, noise and vibration disturbance, water contamination, water-borne disease control, loss of agricultural land for borrow pits, soil erosion protection, generation of wastes, safety and health, traffic congestion, transmission of sexually transmitted disease (HIV), while the generation of employment is enhanced.

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1. Introduction

9. ABD has approved the Loan No.2839-CAM (SF)/8254-CAM (SCF) on 16 December 2011 and Grant 0278-CAM for Improvement of Provincial Roads at the southeastern and mid-west provinces in Cambodia as requested by the Government of Cambodia. This project is the most important project of the Royal Government of Cambodia to improve quality of people's life through improvement of roads and other infrastructures as it provides all-year access to provincial and rural agricultural communities of Prey Veng and Svay Rieng provinces of southeastern Cambodia, and Kampong Chhnang and Kampong Speu province in the mid-west of Cambodia.

10. The Provincial Roads Improvement Project (PRIP) will be implemented for a Contract period of 36 months, which commencement works from September 1st, 2014 and will be completed at the end of August in 2017, in selected national/provincial roads in 4 provinces of Cambodia, namely: (i) Svay Rieng, (ii) Prey Veng, (iii) Kampong Chhnang, and (iv) Kampong Speu. There are five (5) Contract packages to be implemented under the project in selected national roads and provincial roads in Cambodia in 4 provinces. These are: CW-A: Improvement of NR13 (62.4km); CW-B1: Improvement of PR314D (25.5km); CW-B2: Prey Var CBF; and CW-C: Improvement of NR53, PR150B and PR151B (70.63km), which are under Civil Works Output. The remaining contract, on the other hand, CW-D will be awarded under Improved Climate Resilience Output.

11. The project is expected to get more around 640,900 beneficiaries (Commune Database Online, 2010) residing in the areas covered by the project with the Ministry of Public Works and Transport (MPWT) as the Executing Agency (EA). The Project Management Unit 3 (PMU3), as part of the General Department of Public Works of MPWT, is the implementing agency of the Project. MPWT will be responsible for engaging consulting services and awarding civil works contracts. The Project Director of PMU3 will have overall administrative oversight of the consulting services and civil work contracts, and the Project Manager will have responsibility for day-to-day operations.

12. The road will provide an all-year road access from national road to other national roads and provincial town areas, and will provide greater accessibility to basic facilities and services. It will also strengthen the capacity of the MPWT to plan, manage and monitor road maintenance operations and implement the loan covenants and other conditions in the loan package. A Social and Environmental Office (SEO) has been established in MPWT and this will be strengthened during the project. It is also intended to further involve the Provincial Department of Public Works and Transport (PDPWT) in project implementation and monitoring.

13. The road will upgrade target existing MACADAM roads of NR/PR in four provinces to a paved road standard with double bituminous surface treatment (DBST) and single bituminous surface treatment (SBST). The project will also improve bridges and other drainage structures such as box culverts, pipe culverts, and side drainage systems. For these subprojects no new roads will be built. The Project is classified as environment category B and an initial environmental examination (IEE) was conducted as part of project preparation in accordance with ADB Safeguard Policy Statement of 2009 (ADB SPS). The list of the subproject roads is shown in Table 1.

Table 1: List of construction work

Contract	Road No.	Construction Works (road type)	Location			Length	
			Province	Starting Point	End Point	Length (km)	Width (m)
CW-A	NR13	DBST road	-Prey Veng, -Svay Rieng	St.0+000 (Kamchay Mear district, Prey Veng province, Junction NR8)	St.62+400 (Prosot district, Svay Rieng province, Junction NR1)	62.4	11
CW-B1	PR314D	DBST road	-Svay Rieng	St.0+000 (Prosot district, Junction NR1)	St.25+500 (Prey Vor, Cambodia-Vietnam Border)	25.5	11
CW-B2		CBF	-Svay Rieng				
CW-C	PR150B-E	SBST road	-Kampong Chhnang	St.0+000 (Thnal Thor Thoung, Junction NR5)	St.5+447.33 (Taches market, Boeung Tonle Sap)	5.447	8
	PR150B-W	SBST road	-Kampong Chhnang	St.0+000 (Thnal Thor Thoung, Junction NR5)	St.25+550 (Tuek Phos)	25.550	8
	NR53	SBST road	-Kampong Chhnang	St.0+000 (Chi Prang)	St.31+879.41 (Thnal Kaeng)	31.879	8
	PR151B	SBST road	Kampong Speu	St.0+000 (Thnal Kaeng, Kampong Chhnang province)	St.3+581.25 (Amleang, Kampong Speu province)	3.581	8

Table 2: Overall Project Physical Progress by June 2015

Component	Contract	Contract Amount (US\$)	Progress (%)			Remarks
			Previous	This Period	Total	
1. Civil Works	CW-A (NR13)	22,768,558.44	11.08	0.55	11.63	Sinohydro
	CW-B1 (PR314D)	10,728,905.58	12.53	1.22	13.75	Sinohydro
	CW-B2 (CBF)	Not yet due	-	-	-	
	CW-C (PR150B, NR53, PR151B)	18,671,259.25	16.26	1.80	18.06	Gumkang-Visvakam JV
	CW-D (Climate resilience)	Not yet due	-	-	-	
2. Equipment		Not yet due	-	-	-	
3. Consulting Services	CS1 (DDIS)	6,944,430.00	52.5	1.7	54.2	KCI
	CS2 (Road Asset Management)	Not yet due	-	-	-	
	CS3 (HIV)	349,940.00	55.0	3.0	58.0	SBK
	CS4 (Climate resilience)	1,827,142.00	65.0	2.9	67.9	EGIS
Overall Progress (%)			36.9	0.7	37.6	

Source: Monthly Progress Report No. 30 in June 2015 (KCI)

2. Environment Monitoring Mechanism

2.1 Introduction

14. As full implementation of the IEE procedure of the project, the environmental specialist (National Environmental Specialist) were mobilized for preparation of semi-annual environment monitoring of the civil works from 24th July to 17th August 2015. The report represented the activities of the contractors on the project sites in order to ensure compliance with ADB's Social Safeguard Policy Statement 2009. During site inspection, Study Team were accompanied by the staff of the SEO of MPWT, the DDIS consultants and the contractor's representatives.

2.2 Environmental Management Plan (EMP) and CEMP

15. An EMP (Environmental Management Plan) was included in the bidding documents of civil works during the procurement stage. The contractors were required to consider the requirements of the EMP when submitting their bids as the conditions in the EMP become contractually binding on the contractors.

16. The EMP included in the bidding documents is, of necessity, general in scope. This is because specific details such as location of contractors camps, borrow pit areas, rock sources, crushing plants and the like are not known at the bidding stage. These details must be supplied by the contractor in his CEMP – Contractors Environmental Management Plan. All contractors had previously supplied a CEMP. This CEMP for the subprojects has been prepared to deal with mitigation and management measures to be taken during Project implementation to avoid, reduce, mitigate for adverse environmental impacts in compliance with the IEE and EMP in the Contract Documents.

2.3 Environmental Monitoring Program

17. The Environmental Monitoring Program is included in the Environmental Management Plan and so the EMP can be considered as an EMMP - Environmental Management and Monitoring Plan. The major tasks for the environmental monitoring in construction stage include:

- Reviewing the environmental report in previous month that prepared by contractors;
- Field monitoring on contractor's environmental mitigation measure performance in all Subprojects;
- Guidance to MPWT's staff/PMU3 and Contractor's environmental engineers on environmental monitoring aspect, in the field practice;
- Recommend to the Contractors to implement all EMP as stated in IEE report and other environmental safeguards in construction contract documents; and

18. The essence of monitoring is to ensure compliance with environmental legislation. The contractors have a duty to comply with the relevant legislation. The DDIS consultant must check their activities and report to MPWT. In the event of noncompliance with EMP, MPWT can instruct the contractor to comply. Given the nature of the work activities most

monitoring is based on visual observations.

2.4 Measurements

19. Measurements system is a very important component to measure the progressive works especially during the construction stage. It may be necessary to carry out measurements to establish if the regulations are being met. There will be a “hierarchy” of monitoring and measurements. This would be based on measurements being made by persons in the following order:

- Contractors
- Consultants inspectors
- SEO environmental staff from MPWT
- Ministry of Environment (MOE would only be involved if an official complaint was made to them)

20. Initially, contractors are required to check daily that all operations are being conducted correctly. In general “good housekeeping” must be employed. If contractor’s camps are established, then overflowing of septic tanks must be checked by visual inspection. Dust must be controlled by covering of stockpiles and water sprays. Solid waste, engine oil and grease, must be taken away by waste removal contractors and records kept. For road construction operations, lack of dust suppression and noise control are usually the main sources of potential nuisance if activities take place near residential dwellings. Crusher plants and borrow areas can also be sources of noise and dust. Inspection of borrow areas should also include borrow roads used by contractors vehicles. After extraction from borrow areas is finished, reinstatement must be carried out. Warning signs must be erected to avoid drowning if deep ponds are left. Inspectors and SEO staff must make regular checks by visual inspection.

21. Checklists were established and controlled by Construction supervision inspectors, they are making daily spot checks and weekly formal checks on site operations. They check all of the above and view records for waste disposal. They must also investigate any pollution incidents and also taken action in all complaints from residents/Local Authorities if necessary. They are using checklists for record purposes and ensure that any complaints or incident are brought to the notice of the contractor immediately, verbally and with a follow up written notice.

22. Initial monitoring is based on visual inspection and site assessment. Measurements require specialist equipment and this is only needed if a significant incident occurs. Normally, implementation of “Good Housekeeping” and the contractor demonstrating a responsible attitude are sufficient to ensure an environmentally satisfactory operation.

23. In case the vibration, noise, or dust generation are required to measuring or monitoring, then specialized equipment will be needed. The responsibility for requesting the measurements will be the consultant’s. The SEO of MPWT will liaise with MOE and PDOE to arrange the measurements. MOE have vibration equipment for measurement of traffic and blasting vibrations. So far no specialized monitoring equipment has been needed.

24. If dust measurements are needed than a two stage process must be adopted. A high

volume sampler (HVS) will be deployed by MOE. After a suitable period, usually 24 hours, the filter in the HVS will be retrieved by MOE staff and transported to the laboratory for the second stage which is analysis. This requires highly specialized equipment which MOE possess in Phnom Penh. The MOE will charge for this service. These charges must be covered by the contractor.

25. The results must be submitted to SEO who will interpret them with respect to the relevant regulations. Discussions must then be held between SEO, the consultants' inspectors and the contractor to determine how to resolve any problems.

2.5 Timing of Monitoring

26. The timing of the monitoring is very important. The following list is for guidance and is indicative only.

- Liquid emissions from sites must be checked every three months or after heavy rain if overflowing is reported. Measurements in streams and water courses must be made.
- Dust emissions on site must be checked weekly by visual inspection and monthly by examining records of water spraying. Ambient air quality must be checked over a 24h continuous period at sensitive receptors in the event of complaints.
- Noise levels must be checked at site perimeters in the event of a complaint, at night as well as during the daytime.
- Correct removal and disposal of food waste and waste engine oil and grease must be checked weekly by visual inspection of the camps and checking of records from the waste disposal contractors.
- Noise and vibration must be checked at sensitive receptors if blasting occurs or in the event of complaint. Before blasting commences warning notices must be posted to local residents.
- Reinstatement of borrow pits and quarries must be checked after closure of the facility.

27. In addition to regular monitoring, unannounced spot checks must be made by SEU on contractors operations. All of the above procedures should be carried out by the site inspectors, in conjunction with SEU, and where appropriate MOE/ DOE. The results should be formally recorded every week and compiled into a monthly report. This should be submitted to the Engineer, the Chief Resident Engineer and discussed with SEU and the contractors as necessary but at a minimum on a monthly basis. Monthly reports are being compiled into semi-annual reports for submission to ADB.

2.6 Monitoring of CEMP by Checklists

28. The CEMP is monitored and enforced by the Supervision Consultants inspectors who use Checklists included in the EMP. By using the checklists consistency is maintained between the various packages. The checklists are compiled every month and the checklists for all Contract Packages CW-A: Improvement of NR31; CW-B1: Improvement of PR314D; CW-C: Improvement of PR150B, NR53, and PR151B; for January to June 2015. Site inspection of all Environment aspects were sighted and reviewed by the National Environmental Specialist.

29. The checklists had been filled in correctly and reporting was thorough. No significant

environmental issues were identified. Dust from roads was commented upon during dry patches but was not a significant issue and was remedied by increased frequency of water sprays. During the rainy season it ceases to be an issue. No noise complaints had been received. No further remedial works were required at the time of the inspections. No complaints from villagers were reported. Where possible contractors rent local houses for their workers rather than establishing camps. This is easier for them and avoids issues over sanitation and water supply. This approach is actively encouraged and appears to be working well during construction stage.

2.7 Establishment of SEU

30. Social & Environmental Unit (SEU) is a division which has been established in the Department of Planning, MPWT. There is now 5 staff within Social and Environmental Office (SEO): 1 Chief, 1 Vice chief, 1 Resettlement, 2 Environment & Social Safeguards. It is considered that this now makes them effective. SEO can act together with the DDIS consultant or independently to check contractor's activities. In the event of noncompliance with EMP, SEO as part of MPWT can instruct the contractor to comply. During the environmental inspections by the National Environmental Expert the SEO accompanied (Mr. Srey Vireak) the team and so gained On the Job Training. During that time, SEO has discussed meeting together with RE, ARE of the subprojects. When visiting of workers' camp sites, the SEO asked to do the initial environmental audit, present the results and observations, and then a discussion was held. They are improving in their skills and are being encouraged to carry out inspections on their own and submit the results to the SEU Team for review.

3. Results of Environmental Monitoring

31. This Semi-Annual Environmental Monitoring Report focused on environmental issues and environmental mitigation measure were described in following paragraph, and the field recorded is included environmental monitoring checklist data from Contractors' monthly progress reports (January-June 2015), see in **Appendices**.

32. In order to confirm the environmental assessments done by checklist, site visits were conducted to several selected roads by the National Environmental Specialist accompanied by staff from MPWT / SEO. The results of site observation are given below:

3.1 Contract CW-A: Improvement of NR13 in Svay Rieng and Prey Veng

33. **CW-A** is the subproject for improvement of NR13 and other structure works along the National Road No.13, the starting point of the project at PK0+000 (the junction of NR8, Prey Veng province) and end point at PK62+430 (the junction of NR1 in Svay Rieng province), this subproject will be upgraded to DBST road of 62.4km and reconstruction of other structure works. SINOHYDRO Corporation Limited Co., Ltd is the Contractor. Construction works commenced on 1st September 2014 and the expected completion date in August 2017.

34. Site inspection indicates that all the construction work activities are progressing slowly, i.e. by June 2015 the embankment works of CW-A just have commencement activities from PK15+000 to PK28+000, and from PK52+000 to PK62+000. At the time, most of

structure works nearly completed. On the other hand, the Monthly Progress Report No.30, June 2015 shows that the work outputs for this subproject is on-going, however; the accumulated monthly progress by June 2015 was only 11.63% against the planned 44.06%. So 32.43% delay of the scheduled.

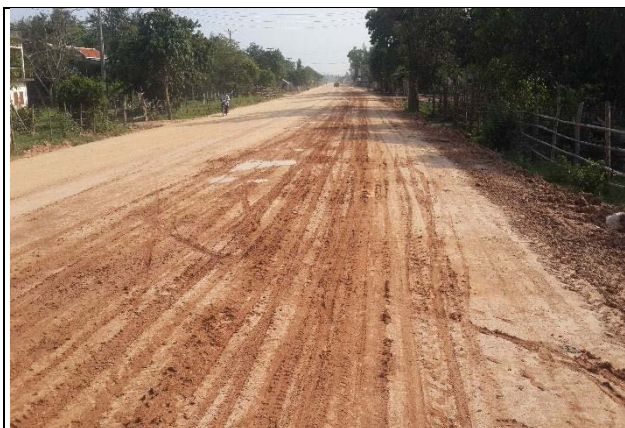


Figure 1: Embankment works at PK52+000



Figure 2: Embankment works at PK62+000



Figure 3: Embankment works at PK61+100



Figure 4: Earth works & clearance at PK39+00 to PK62+390 over the old existing DBST

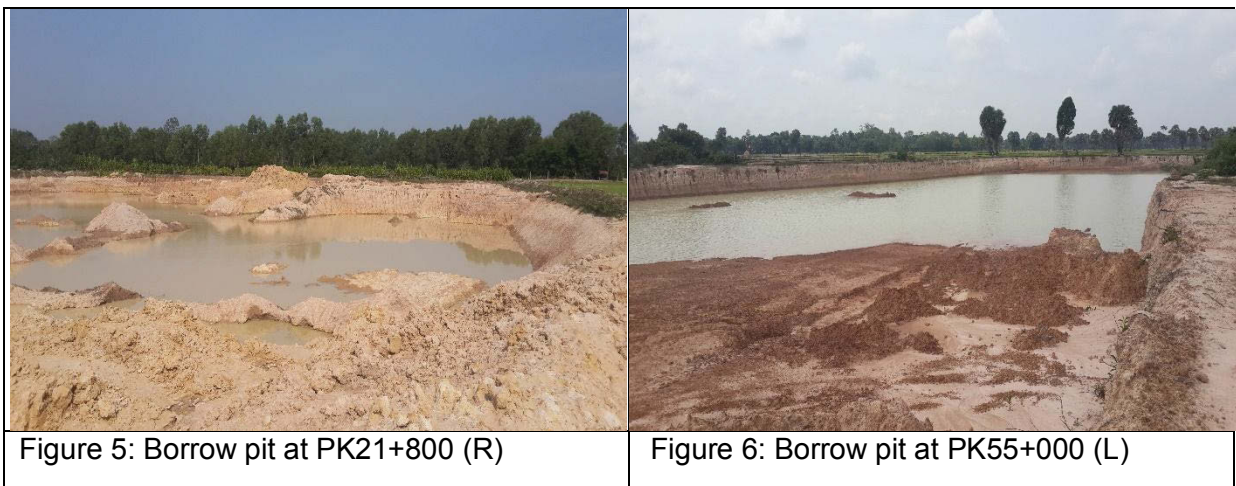
35. Leaks and spills of hazardous material: The fuel storage facilities at the SINOHYDRO's site camp are well managed. Both stations had an in charged person for daily operation and maintain including security and safety.

36. Soil erosion: In generally no sign of soil erosion during the site monitoring in this month, most of the embankment works along this road are far away from the water courses. On the other hand there had not earth work along the embankment at all due to this month is full wet season and intermittent rains.

37. Borrow pits/quarries: Out of the 92 borrow pits 81 have already approved. To date 28 July 2015, there have 6 borrow pits only are excavating for soil material, there are: the borrow pits PK15+000, PK21+000, PK31+000, PK41+000, PK42+000 and PK55+000. Most of these borrow pits are not yet re-fenced. The two borrow pits were observed at the right and left

hand site at PK21+800 and PK55+000, respectively, see in Figure 5 and Figure 6 showed the present condition of those borrow pits.

38. It meant that the Contractor did not install prevention fence around those borrow pits and implemented on environmental mitigation measure to the borrow pits used for the subproject of CW-A.



39. Water quality: During field observation there was not signed of water laden into the rice field or water body nearby the embankment of the construction road, due to very small track work and drainage system under construction, no earth work activities at that time.

40. Dust generation: During earth works and embankment dust generation were observed, however, the Contractor's regularly sprinkling of water is being done at least two times per day at that time (see in Figure 7 and Figure 8). Furthermore, the Contractor is required to formulate and implement a dust abatement program such as can be noted that dust and emission air from construction machineries are main polluted sources. There were very small activities of CW-A. So polluted air and dust come from construction machineries and compaction activity of embankment are very small or minor.



41. Waste management: The workshops and storage areas in Site Camp of the

Contractor have been improved and equipped with garbage bin as shown in figure 9. The platform space of Contractor site camp is well cleaned. Most of the construction sites are well managed of solid waste as well as spoil soil, during site observation in July 2015 as shown in figure 10.

42. No environmental issues were observed on the site. This site could be used as a good teaching example to other contractors.



Figure 9: Garbage bins were equipped in the Contractor's site camp at PK58+400, July 2015



Figure 10: Storage area in Contractor's site camp at PK58+400, July 2015

43. Safety, all the workshops and storage places have been equipped with extinguisher capacity of 4kg (at least 4 bottles).



Figure 11: Extinguisher were equipped in the Contractor's site camp at PK58+400, July 2015



Figure 12: Storage area in Contractor's site camp at PK58+400, July 2015

3.2 Contract CW-B1: Improvement of PR314D in Svay Rieng

44. PR314D of 25.5km length is being constructed under Contract CW-B1. The road CW-B1, the workers camp and other structure works to the road were inspected.

45. Environmental monitoring of this subproject (CW-B1) were inspected on 27-28 July 2015. The status of this Sub-project is under construction, but the progressing works is very

slowly against the scheduled plan, which Resident Engineer (Mr. THANAWICH Nithis) confirmed during discussion meeting in KCI's office at Svay Rieng province. No work activities were observed during site inspection, except the earth works and embankment works has done the previous time from PK0+800 to PK15+500. However, clearance work has delayed due to the heavy raining and resettlement issue.

46. By June 2015, the monthly report indicates that the Contractor completed clearing & grubbing works for 15 km length, and 127,875 m³ out of 311,407 m³ for embankment has been completed up to this reporting period. Construction of Engineer's camp is on-going. Totally 198m of 400mmx400mm, 140m of 500mmx500mm precast pile for Bridge have been produced up to this reporting period. And 1,416m of 800mm, and 696m of 1,200mm pipe culvert have been produced up to this reporting period. 561.6m of pipe culvert installation has been completed up to this month.

47. Basically, accumulated monthly progress of the contract CW-B1 is 13.75% against planned 40.10%, therefore 26.35% delayed of the planned. The Contractor is requested to update construction plan.



Figure 13: Beginning Point of the PR314D at PK0+000, Junction of NR1, 27July 2015



Figure 14: Beginning Point of the PR314D at PK0+000, Junction of NR1, 27July 2015

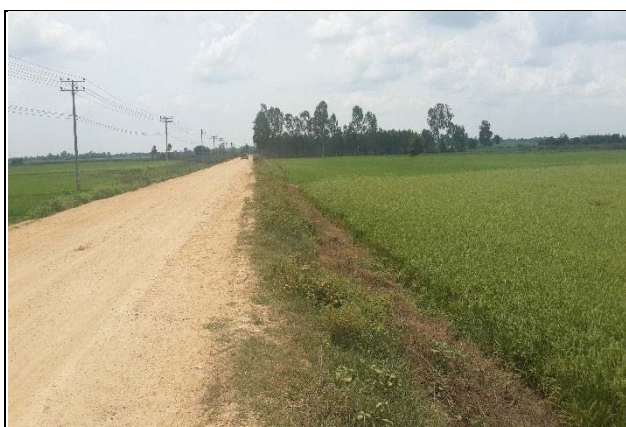


Figure 15: The road passing through rice field PK15+000 to PK20+000, 27July 2015



Figure 16: Trapeang Trav Pagoda is located along the road of PR314D, 27July 2015

48. The workers camp site is located at a narrow piece of land between residential

properties. Good use has been made of the available space and in general the site displays a high standard of housekeeping. The land is rented.



Figure 17: Sub-Contractor site camp for CW-B at PK8+550, 27 July 2015



Figure 18: Oil Tank is is bounded with concrete, road of PR314D, 27 July 2015

49. The liquid waste generation from the project is wastewater from the bathing and flushing toilet. Generally, the workers camps shall be equipped with bathing room and toilet. The bathing water shall be drained into the storage tanks, figure 19 and Figure 20. The toilet is built separated between men and women.



Figure 19: Flush water provided to toilets which are cleaned every day, (Sub-Contractor)

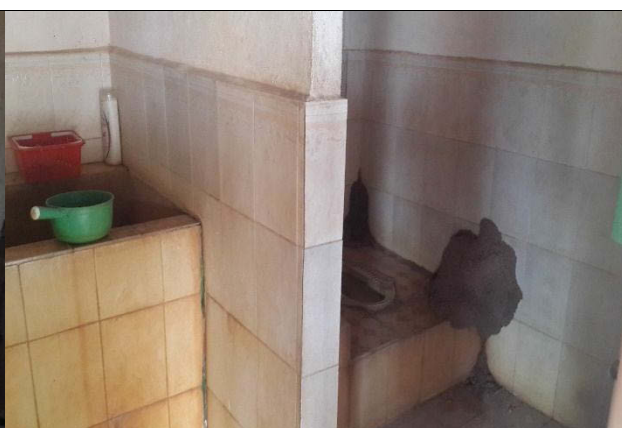


Figure 20: Flush water provided to toilets which are cleaned every day, (Sub-Contractor)



Figure 21: Flush water provided to toilets which are cleaned every day, (Sub-Contractor)



Figure 22: Flush water provided to toilets which are cleaned every day, (Sub-Contractor)

are cleaned every day, (Main Contractor)

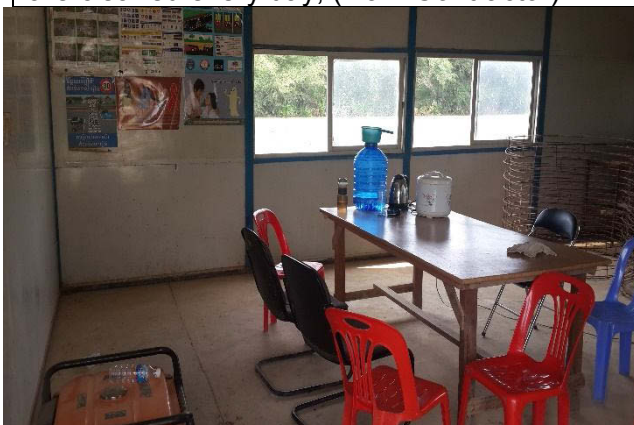


Figure 23: Clean Dinner room, and bottled drinking water (Main Contractor)

which are cleaned every day, (Main Contractor)



Figure 24: Clean environment in/around Contractor's site camp, (Main Contractor)

50. This workers camp is complying with the CEMP and an excellent standard of environmental management is being achieved. The contractor and the KCI inspector are to be complimented on their efforts. However, the progress of work is slow due to the weather condition (by rain).

51. No environmental issues were observed on the site. This site could be used as a good teaching example to other contractors.

3.3 Contract CW-C: Improvement of PR150B, NR53 and PR151B

52. Based on the Monthly progress report in June 2015 indicates that the general physical progress of the contract CW-C is 18.06% against planned 24.33%, so it is 6.27% behind the scheduled.

53. In general the Consultant's site camp (accommodation) was inspected during site visits as well.

54. Waste management, during site observation in July 2015, most of the Contractor's camp sites are well managed of solid waste. The garbage bins/recycle bins at work sites and the contractor's office were equipped. However, the solid waste at the Consultant's site camp (KCI, CW-C, in Kg Chhnang) is still very poor managed, therefore the Consultant's site camp needs to provide properly garbage bins/recycle bins at the place. On the other hand, the Consultant Team should be contracted with the Local Authorities/Company to collect and dispose the solid waste generated from all activities to dumping area. Figure shows the condition of solid waste management in the consultant site.

55. Leaks and spills of hazardous material: Improper oil/fuel container storage or change engine oil was carried out inaccurately at CW-C (photo 25 & 26), the contractor should have provided a suitable tank. At the workshops and storage area was observed that (i) improper oil/fuel drum storage, (ii) insufficient housekeeping.

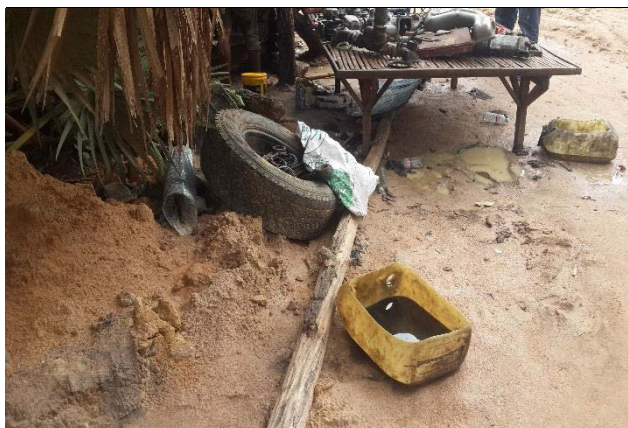


Figure 25: Improper oil/fuel drum storage for CW-C, at PK8+200, date: 30 July 2015



Figure 26: Improper oil/fuel drum storage for CW-C, at PK8+200, date: 30 July 2015

56. Soil erosion: In generally no sign of soil erosion along the construction road (CW-C: PR150B) during the site monitoring in this month. On the other hand, at the precast yard, it is accelerated works of pipe culverts.



Figure 27: Embankment are bare earth and are vulnerable to soil erosion, date: 30 July 2015



Figure 28: Pipe culverts were installed at the precast yard for CW-C, at PK24+200

57. Borrow pits: By June 2015, it is observed that the Contractor uses only approved of borrow pits for construction materials at this project. It is observed that some borrow pits will be utilized for aquaculture or developed as water reservoir for community use, however; most of the borrow pits did not install the pre-fence to prevent any accidents may be accused. The Contractor will responsible for rehabilitating any borrow sites opened and operated by them.



Figure 29: This borrow pit were requested by owner to fish raising purposed at PK6+300



Figure 30: Temporary borrow pits entrenched along the PR151B should be backfilled

58. Water quality: During field observation there was not signed of water laden into the rice field or water body, due to the earthwork activities was carried out by place. However, the embankment are bare earth and are vulnerable to soil erosion in heavy rain. The embankment work activities is carried out from PK6+000 to PK24+000 for PR150B, and for PK0+000 to 30+800 for NR53 in this month.

59. Air pollution: No dust generation were observed during site inspection due to the rainy season, so no dust and emission air from any polluted sources.

60. Leaks and spills of hazardous material: The contractor's camp was inspected. In general housekeeping is a good managed. The fuel storage facilities for CW-C are very good installation (concrete platform and wall, and security equipment and fence), see figure 29 & 30. Both stations had an in charged person for daily operation and maintain including security and safety.

61. The monitoring work in this month found that the fuel storage places for CW-C (main contractor) are well managed of leakage fuel, no sign of spillage on the ground and on the concrete floor.



Figure 31: Fuel storage facilities



Figure 32: Fuel storage facilities

62. Safety: All the workshops and storage places have been equipped with extinguisher

capacity of 8kg (at least 2 bottles). And first aid kits were equipped in the site camp as well.

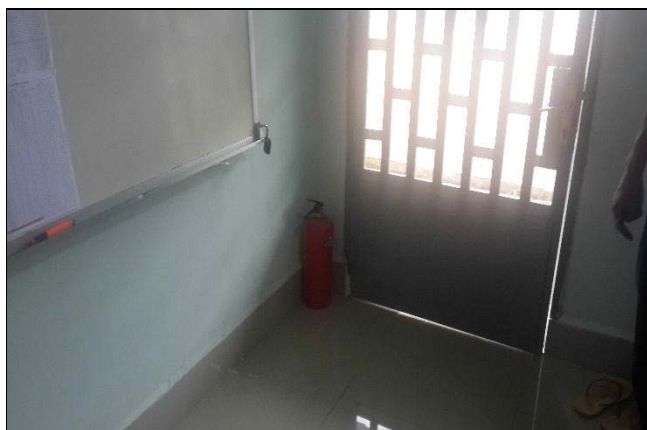


Figure 33: Fuel storage facilities



Figure 34: First aid kits were equipped at site

63. Traffic problem: On date of the field observation, the monitoring team did not see any traffic congestion as well as accident that caused by the project activities. Most of the construction activities are on the construction areas equipped with warning signed from PK6+000 to PK24+000 along PR150B.



Figure 35: Traffic sign were installed at PK6+000, date 30 July 2015



Figure 36: Warning sign were equipped at PK8+200, date 30 July 2015

64. In conclude this workers camp is complying with the CEMP and an excellent standard of environmental management is being achieved. The contractor and the KCI inspector are to be complimented on their efforts. However, the progress of works is slow due to the weather condition (by rain).

65. No environmental issues were observed on the site. This site could be used as a good teaching example to other contractors.

66. On the other hand, CW-C for NR53, embankment work and other structure works were carrying out from PK0+000 to 30+800. During that time, some borrow pits and other construction activities were observed.

67. During earth works and embankment dust generation were observed, however, the Contractor's regular sprinkling of water is being done at least two times per day at that time (see in Figure 37 and Figure 38). So polluted air and dust come from construction machineries and compaction activity of embankment are very small or minor.



Figure 37: Dust generation along the PR53 at PK52+000 to PK15+000, date 30 July 2015



Figure 38: Water truck were provided by Contractor for regular sprinkling water

68. In general, the status of NR53, there was not signed of water laden into the rice field or water body nearby the embankment of the construction work, however; soil material are slipped and are vulnerable to the rice field and water course in heavy rain. This is a waste of embankment material and can block water course. So the Contractor should be encouraged to strip or entrench for water flowing as soon as possible and practical.



Figure 39: Waste embankment slipped to water course at PK30+475 along NR53, 30 July 2015



Figure 40: Embankment material stockpiles along the NR53, date 30 July 2015

69. Therefore, CW-C: Improvement of PR150B, NR53, and PR151B, in actual site no other environmental issues were observed. The contractor's activities were considered acceptable.

4. Review of Environmental Parameters

70. Environment parameters were checked and reviewed for three contract packages. All civil works have been evaluated satisfactory and no major environmental issues were found. The review of results on environmental parameters of each contract package are shown in **Table 3**.

Table 3: Environmental Parameters Contract Packages CW-A, B1, B2, C, and D

Regulation	Environmental Issue	Parameter	Standard	Contract Packages CW-A	Contract Packages CW-B1	Contract Packages CW-B2	Contract Packages CW-C	Contract Packages CW-D
ADB requirement	Notification of EMP to contractors	General requirements	ADB Social Safeguards Policy Statement 2009	Completed. EMP included in Tender Documents issued to contractors.	Completed. EMP included in Tender Documents issued to contractors.	N/A	Completed. EMP included in Tender Documents issued to contractors.	N/A
ADB requirement	Submission of CEMP from contractor to MPWT	Specific details must be supplied by contractor on construction camps, borrow areas and roads, quarries, crushing and screening plants.	ADB Social Safeguards Policy Statement 2009	Submitted by contractor. NR13 completed.	Submitted by contractor. PR314D completed.	N/A.	Submitted by contractor. PR150B, NR53, PR151B Completed	N/A
EMP requirement	Monthly Checklists	All environmental parameters	As per individual checklists given in EMP	Checklists completed by Contractor for January to June 2015. Checklists sighted and confirmed to be in order. No environmental issues identified.	Checklists completed by Contractor for January to June 2015. Checklists sighted and confirmed to be in order. No environmental issues identified.	N/A	Checklists completed by Contractor for March to June (4 months only). Checklists sighted and confirmed to be in order. No environmental issues identified.	N/A
Sub-decree on Water Pollution Control	Water Quality	BOD	< 50mg/L	No visual evidence was sighted of impacts on water quality. No spills were observed. There are no major water courses near project roads. No remedial action is required. No sampling or measurements of water.	No visual evidence was sighted of impacts on water quality. No spills were observed. There are no major water courses near project roads. No remedial action is required. No sampling or measurements of water.	N/A	No visual evidence was sighted of impacts on water quality. No spills were observed. There are no major water courses near project roads. No remedial action is required. No sampling or measurements of water.	N/A
		SS	< 50mg/L					
		Temperature	<45°C					
		pH	6-9					
		Oil & Grease	< 5mg/L					
		Dissolved Oxygen	> 4mg/L					

Regulation	Environmental Issue	Parameter	Standard	Contract Packages CW-A	Contract Packages CW-B1	Contract Packages CW-B2	Contract Packages CW-C	Contract Packages CW-D
Sub-decree on Air and Noise Pollution Control	Air Quality	TSP	< 0.33 mg/m ³	No major air quality issues identified. Dust suppression on roads improved by more water spraying. Minor noise issues cured by controlling speed of vehicles.	No major air quality issues identified. Dust suppression on roads improved by more water spraying. Minor noise issues cured by controlling speed of vehicles.	N/A	No major air quality issues identified. Dust suppression on roads improved by more water spraying.	N/A
	Noise Quality	Leq	75dB(A)					
		Leq	65dB(A)					
No Regulation	Vibration	PPV	< 1mm/sec	No blasting taking place, quarry will be carry from Prey Veng province that issued the official certificate or license.	No blasting taking place, quarry will be carry from Prey Veng province that issued the official certificate or license.	N/A	No blasting taking place, blasting will be carry out only with permission of the concerned authorities	N/A
Sub-decree on Solid Waste Management	Solid Waste	Food Waste	Properly Removed	Site camps acceptable. Attention to be given to oil storage and handling.	Site camps acceptable. Attention to be given to oil storage and handling.	N/A	Site camps acceptable. Attention to be given to oil storage and handling.	N/A
	Liquid Waste	Waste Oil, Grease	Properly Controlled After Removed by Subcontractor					
No Regulation	Septic Tank	Smell, Sewage	No Smell, No Overflowing	Workers camps acceptable. Where possible houses are being rented rather than setting up camps.	Workers camps acceptable. Where possible houses are being rented rather than setting up camps.	N/A	Workers camps acceptable. Where possible installed on the residential land are being rented for setting up camps.	N/A
No Regulation	Borrow Pits	Condition of Borrow Pits	Filled after Project Completion, Topsoil resurfaced	No issues identified. But should e-fenced around there after Project Completion	No issues identified. But should e-fenced around there after Project Completion	N/A	No issues identified. But should e-fenced around there after Project Completion	N/A
No Regulation	Borrow Pits	Depth of Borrow pits	No Drowning Hazard	No issues identified	No issues identified	N/A	No issues identified.	N/A
No Regulation	Borrow Road	Location for Borrow Road	No complaints from residents	No issues identified	No issues identified	N/A	No issues identified.	N/A
No Regulation	Quarries	Condition of Quarries	Quarries reinstated	N/A	N/A	N/A	N/A	N/A
No Regulation	Trees if Cut	Number of Trees	Tree Replanted	N/A	N/A	N/A	N/A	N/A

5. Corrective Actions

71. All Corrective Actions were implemented and the contractors are complying with the CEMP.

6. Outstanding Issues

72. There is no outstanding issue involved in environmental management.

7. Conclusion

73. All above results of the semi-annual environment monitoring on the ongoing civil works of the Project, there are no significant impact were identified during in this period. The Contractor has implemented the environmental management and mitigation measures compliance with the EMP/CEMP, Contract documents in The Technical Specification report and in other related environmental documents.

74. Related to monitoring items, air pollution has been carried out continually to reduce dust generation and gaseous emissions from road construction work activities and machineries by the Contractor at the construction sites. Among of monitoring items, worker camps and quarry & borrow pit sites operation are the most important to determine the effects of the project activities. As the results of the monitoring on one site camp, the Contractor for CW-B1 was a good management and could serve as an example to other contractors or/and sub-contractors, moreover, there are no any environmental causes or influences caused by these sub-projects implementation, so the construction activities have been continuously carried out strictly follow the environmental monitoring in the EMP and CEMP and other relevant environmental contracts. DDIS consultants with SEO will continue to inspect the sites frequently and closely monitor the contractor's field activities to ensure compliance with the requirements in the EMP and CEMP. Another review will take place after 6 months.

Appendix A- Checklist of EMP Implementation for Contract CW-A

ENVIRONMENTAL MONITORING CHECK LIST

January-June 2015

Provincial Road Improvement Project
ADB Loan No.2839-CAM (SF)/8254-CAM
Contract Package CW-A: Improvement of NR13

CHECKLIST 1 Construction Camps

(N.B. There is no specific regulation for this activity.

"Good Housekeeping" must be observed and "General Industry Practice" followed)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly during preparation of camp, at opening of camp, then weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the camp / yard being properly maintained?	✓			✓			✓			✓			✓			✓		
If no, list what is not being done properly:																		
Is the wastewater being disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is being disposed and what are the impacts: If no, comment on. Have septic tanks been installed? Are they working correctly, that is not overflowing, or emitting smell?																		
Is the solid waste being disposed off properly?	✓			✓			✓			✓			✓			✓		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If no, comment on how it is being disposed and the impacts of such disposal:																		
Is attention being paid to "Good housekeeping"?	✓			✓			✓			✓			✓			✓		
If no, comment on what is not being done:																		
Are the contractor's vehicles being maintained at the campsite / yard?	✓			✓			✓			✓			✓			✓		
If yes, are appropriate precaution taken to avoid water and land contamination? Waste oil are collected in a collection bin and stored for reuse as formwork																		
Is the waste from vehicle maintenance being disposed off properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is being disposed:																		
Is the fuel storage area properly surfaced and has a containment kerb around it?	✓			✓			✓			✓			✓			✓		
If no, comment on how the surrounding area is being affected:																		
Are occupational health and hygiene precautions being taken?	✓			✓			✓			✓			✓			✓		
If no, comment on where they are being neglected: Bound wall to be constructed																		
Does the community have any issues with the camp?		✓			✓			✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments: Health and safety gadgets are around and waiting delivery																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 2 Borrow Pits / Quarries

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly during preparation of borrow pit, at opening, then weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the borrow pit / quarry located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the borrow pit / quarry being properly maintained?	✓			✓			✓			✓			✓			✓		
If no, state what is not being done :																		
Is there adverse visual impact due to the borrow pit?		✓			✓			✓			✓			✓			✓	
If yes, comment how:																		
Is borrow pits / quarries excavation / mining adequately employing drainage and fill methodology to avoid any water pools formation during rains?		✓			✓			✓			✓			✓			✓	
If no, comment: Borrow pit shall be utilized by owner for importing water for domestic used.																		
Is the borrow pits / quarry properly rehabilitated at least partially before the start of the rainy season?		✓			✓			✓			✓			✓			✓	

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If no, comment on what needs to be done: The owner need the pit to impound water during rainy season																		
Are there any signs of erosion and instability?		✓			✓			✓			✓			✓			✓	
If yes, what seems to be the reason?																		
Are the cut faces stabilized with appropriate materials and methods?	✓			✓			✓			✓			✓			✓		
If no, what are the impacts?																		
Is the borrow pit / quarry to be closed and rehabilitated?		✓			✓			✓			✓			✓			✓	
If yes, Is there a closure plan?																		
Are the borrow pit / quarry operations creating excessive dust / noise?		✓			✓			✓			✓			✓			✓	
If yes, are any measures being taken to minimize dust and noise?																		
Do the communities have any concerns / issues with borrow pit / quarry during operation or after closure?		✓			✓			✓			✓			✓			✓	
If yes, what are those concerns / issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 3 Erosion of Slopes

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is / are the reason(s) for erosion / landslides / instability?																		
a. Improper design / stripping of cut faces		✓			✓			✓			✓			✓			✓	
b. Improper drainage		✓			✓			✓			✓			✓			✓	
c. Clearing of vegetation / lack of gabions, geotextiles		✓			✓			✓			✓			✓			✓	
d. Improper leveling after earth removal		✓			✓			✓			✓			✓			✓	
e. Are the slopes properly stabilized before the start of the rainy season?	✓			✓			✓			✓			✓			✓		
f. Inadequate water channel diversion, or		✓			✓			✓			✓			✓			✓	
g. A combination of some of the reasons above		✓			✓			✓			✓			✓			✓	
Is remedial action required?																		
If yes, comment:																		
Did the erosion / landslide / instability cause any damage?		✓			✓			✓			✓			✓			✓	
If yes, what was the nature of the damage?																		
Did the contractor take appropriate mitigatory measures, pre and post erosion / instability / landslides, to avoid / counter the problem?	✓			✓			✓			✓			✓			✓		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If no, why did the contractor not consider it necessary to take appropriate mitigatory measures?																		
Was the erosion brought to the notice of appropriate authorities by the communities?																		
If yes, was there any action taken?																		
If no, why was action not taken?																		
Any additional comments: No Erosion is occurring due to adequate work method																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 4 Air Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of air pollution?																		
a. Dust from road	✓			✓			✓			✓			✓			✓		
b. Dust from stock piled materials																		
c. Generator, batching plant emissions																		
d. Vehicular emissions																		
Is the problem significant enough to warrant attention?		✓			✓			✓			✓			✓			✓	
If yes, did the contractor take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
a. Periodic water sprays on road surface / borrow pits			✓			✓			✓			✓			✓			✓
b. Vehicle tire washing facilities at borrow pits and other locations																		
c. Speed limit enforced on project vehicles			✓			✓			✓			✓			✓			✓
d. Vehicles speeding checked by posting signs on roads, and awareness raising of staff and local communities																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
e. Covering of stock piled materials																		
f. Vehicles regularly maintained			✓			✓			✓			✓			✓			✓
g. Equipment regularly maintained			✓			✓			✓			✓			✓			✓
Is air pollution creating problems for the surrounding communities?		✓			✓			✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 5 Water Pollution (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in Sub Decree on Water Pollution Control, No. 27 ANRK.BK, April 06, 1999)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of water contamination?																		
1.1 Surface Water (stream, pond etc.)																		
disposal of cut spoil into water body or on slope leading to water body																		
discharge of wastewater from camp into fresh water body																		
road run-off into water body																		
discharge of used oil, fuel, grease, etc. into water body																		
1.2 Groundwater																		
leakage of oil, fuel, wells, etc. on land resulting in contamination of ground water and wells																		
any other reason																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact long term?																		
If yes, comment:																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Can it be ratified by mitigatory measures?																		
If yes, what type of mitigatory measures should be taken?																		
Did community bring the problem to the notice of authorities?																		
Has action been taken to counter the problem? Is it effective?																		
Additional comments: No contamination																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 6 Agriculture (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Law on Agriculture made by MAFF)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the impact of project activities on agriculture activities?																		
road encroachment on paddy / agricultural land																		
borrow pit located on agricultural land																		
spoil dump located on agricultural land																		
diversion of water channels and road construction resulting in inundation of agricultural land																		
irrigation channels broken / diverted due to project activities																		
oil, grease and fuel road run-off contaminating agricultural fields																		
any other project activities resulted in destruction of agricultural land																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, how?																		
Is the impact temporary?																		
If yes, when and how could it be corrected?																		
Is the contractor using any insecticides on the site which adversely affect farmland?																		
If yes, comment:																		
Is the community satisfied with the measures taken by the contractor to protect farmland?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect farmland?																		
If no, what is being suggested by the local administration?																		
Any additional comments: Access road are property constructed and maintained																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 7 Land Contamination (None)

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What are the impacts of project activities on land?																		
road run-off of oil, grease and fuel contaminating land																		
fuel oil / used oil / grease spill on land in equipment yards / camps sites																		
indiscriminate discharge of waste water on land																		
indiscriminate disposal of solid waste																		
any other project activities resulting in land contamination																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		
If yes, what type pf mitigatory measures should have been taken?																		
Is the impact temporary?																		
If yes, when and how could it be corrected?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the community satisfied with the measures taken by the contractor to protect agricultural activities?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect agricultural activities?																		
If no, what is being suggested by the local administration?																		
Did the community allow the use of their land for borrow pit or any other purpose?																		
If yes, what was the motivation behind it?																		
If no, did the contractor take permission from the land owner and local administration for the specific use?																		
Any additional comments: Compensation of Affected land are negotiated and paid to owner prior to site possession.																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 8 Cultural Heritage (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in "Law on Protection of Cultural and National Heritage", (1996)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Does the project area have any cultural heritage, archaeological, historical or religious sites?		✓			✓			✓			✓			✓			✓	
If yes, are they affected in any way by the project activities?		✓			✓			✓			✓			✓			✓	
If yes, how?																		
Did the concerned authorities and the contractor take any appropriate measures to protect the site?		✓			✓			✓			✓			✓			✓	
If yes, what are the measures taken?																		
Are the communities satisfied with the measures taken?																		
Is the community satisfied with the measures taken by the contractor to protect land?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect land?																		
If no, what is being suggested by the local administration?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 9 Noise Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of noise pollution?																		
vehicles on road	✓			✓			✓			✓			✓			✓		
Generators, construction plant	✓			✓			✓			✓			✓			✓		
Construction vehicles	✓			✓			✓			✓			✓			✓		
vibration from equipment	✓			✓			✓			✓			✓			✓		
vibration from road vehicles	✓			✓			✓			✓			✓			✓		
vibration from explosive blasting																		
Is the problem significant enough to warrant attention?		✓			✓			✓			✓			✓			✓	
If yes, did the contractor / consultant take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
vehicles regularly maintained and silencers checked			✓			✓			✓			✓			✓			✓
speed limit enforced on project vehicles			✓			✓			✓			✓			✓			✓
construction equipment maintained and silenced			✓			✓			✓			✓			✓			✓
compressors and generators operated with silencing panels closed			✓			✓			✓			✓			✓			✓
awareness raising of staff over causing nuisance to local communities			✓			✓			✓			✓			✓			✓

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
blasting at fixed times and communities notified																		
Avoid undertaking construction activities and blasting close to communities at night			✓			✓			✓			✓			✓			✓
Is noise pollution creating problems (health, aesthetic & nuisance) for the surrounding communities?		✓			✓			✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 10 Drainage and Flooding

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: As required						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the flooding extensive or not?		✓			✓			✓			✓			✓			✓	
If yes, give details:																		
Have contractors activities caused flooding or blocked drains?		✓			✓			✓			✓			✓			✓	
If yes, give details:																		
Have cross drainage structures been built in correct location as shown in contract?																		
If no, give details:																		
Are cross drainage structures "as built" same as in "detailed design"?																		
If no, give details:																		
Any other issues																		
If yes, give details																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 11 Construction Camps Closure

(N.B. There is no specific regulation for this activity.)

Project Site: Improvement of NR13 from Prey Veng to Svay Rieng 62.43km						
Observer: Dang Peng						
Frequency: Check at closure of camp.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Has the camp / yard been properly cleared of all debris and revegetated?	✓			✓			✓			✓			✓			✓		
If no, list what was not done properly:																		
Was the wastewater disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it was being disposed and what were the impacts:																		
Were septic tanks installed? Have they been removed?		✓			✓			✓			✓			✓			✓	
If no, why not?																		
Was solid waste disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it was being disposed and the impacts of such disposal:																		
Was attention being paid to housekeeping?	✓			✓			✓			✓			✓			✓		
If no, comment on what was not being done:																		
Have all the contractor equipments being removed from the campsite / yard?		✓			✓			✓			✓			✓			✓	

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, have all appropriate precautions been taken to avoid water and land contamination?																		
Has the scrap metal from vehicle maintenance being disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is to be disposed:																		
Has all fuel storage been removed from the site?		✓			✓			✓			✓			✓			✓	
If no, comment on how the surrounding area is being affected: Site in used																		
Have all general offices and staff dwellings been removed?		✓			✓			✓			✓			✓			✓	
If no, comment on if they are to be handed over to new owner or other plans: Site in use																		
Does the community have any issues with the camp closure?		✓			✓			✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

Source: Monthly progress report of contractor (SHINOHYDRO) from January to June 2015

Appendix B- Checklist of EMP Implementation for Contract CW-B1

ENVIRONMENTAL MONITORING CHECK LIST

January-June 2015

Provincial Road Improvement Project
ADB Loan No.2839-CAM (SF)/8254-CAM
Contract Package CW-B1: Improvement of PR314D

Semi-Annual Environmental Monitoring Report

CHECKLIST 1 Construction Camps

(N.B. There is no specific regulation for this activity.

"Good Housekeeping" must be observed and "General Industry Practice" followed)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly during preparation of camp, at opening of camp, then weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the camp / yard being properly maintained?	✓			✓			✓			✓			✓			✓		
If no, list what is not being done properly:																		
Is the wastewater being disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is being disposed and what are the impacts:																		
If no, comment on.																		
Have septic tanks been installed?																		
Are they working correctly, that is not overflowing, or emitting smell?																		
Is the solid waste being disposed off properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is being disposed and the impacts of such disposal:																		
Is attention being paid to "Good housekeeping"?	✓			✓			✓			✓			✓			✓		
If no, comment on what is not being done:																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Are the contractor's vehicles being maintained at the campsite / yard?	✓			✓			✓			✓			✓			✓		
If yes, are appropriate precaution taken to avoid water and land contamination? Waste oil are collected in a collection bin and stored for reuse as formwork																		
Is the waste from vehicle maintenance being disposed off properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is being disposed:																		
Is the fuel storage area properly surfaced and has a containment kerb around it?	✓			✓			✓			✓			✓			✓		
If no, comment on how the surrounding area is being affected:																		
Are occupational health and hygiene precautions being taken?	✓			✓			✓			✓			✓			✓		
If no, comment on where they are being neglected: Bound wall to be constructed																		
Does the community have any issues with the camp?		✓			✓			✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments: Health and safety gadgets are around and waiting delivery																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 2 Borrow Pits / Quarries

(N.B. There is no specific regulation for this activity.)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly during preparation of borrow pit, at opening, then weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the borrow pit / quarry located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the borrow pit / quarry being properly maintained?	✓			✓			✓			✓			✓			✓		
If no, state what is not being done :																		
Is there adverse visual impact due to the borrow pit?		✓			✓			✓			✓			✓			✓	
If yes, comment how:																		
Is borrow pits / quarries excavation / mining adequately employing drainage and fill methodology to avoid any water pools formation during rains?		✓			✓			✓			✓			✓			✓	
If no, comment: Borrow pit shall be utilized by owner for importing water for domestic used.																		
Is the borrow pits / quarry properly rehabilitated at least partially before the start of the rainy season?		✓			✓			✓			✓			✓			✓	
If no, comment on what needs to be done: The owner need the pit to impound water during rainy season																		
Are there any signs of erosion and instability?		✓			✓			✓			✓			✓			✓	
If yes, what seems to be the reason?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Are the cut faces stabilized with appropriate materials and methods?	✓			✓			✓			✓			✓			✓		
If no, what are the impacts?																		
Is the borrow pit / quarry to be closed and rehabilitated?		✓			✓			✓			✓			✓			✓	
If yes, Is there a closure plan?																		
Are the borrow pit / quarry operations creating excessive dust / noise?		✓			✓			✓			✓			✓			✓	
If yes, are any measures being taken to minimize dust and noise?																		
Do the communities have any concerns / issues with borrow pit / quarry during operation or after closure?		✓			✓			✓			✓			✓			✓	
If yes, what are those concerns / issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 3 Erosion of Slopes

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is / are the reason(s) for erosion / landslides / instability?																		
a. Improper design / stripping of cut faces		✓			✓			✓			✓			✓			✓	
b. Improper drainage		✓			✓			✓			✓			✓			✓	
c. Clearing of vegetation / lack of gabions, geotextiles		✓			✓			✓			✓			✓			✓	
d. Improper leveling after earth removal		✓			✓			✓			✓			✓			✓	
e. Are the slopes properly stabilized before the start of the rainy season?	✓			✓			✓			✓			✓			✓		
f. Inadequate water channel diversion, or		✓			✓			✓			✓			✓			✓	
g. A combination of some of the reasons above		✓			✓			✓			✓			✓			✓	
Is remedial action required?																		
If yes, comment:																		
Did the erosion / landslide / instability cause any damage?		✓			✓			✓			✓			✓			✓	
If yes, what was the nature of the damage?																		
Did the contractor take appropriate mitigatory measures, pre and post erosion / instability / landslides, to avoid / counter the problem?	✓			✓			✓			✓			✓			✓		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If no, why did the contractor not consider it necessary to take appropriate mitigatory measures?																		
Was the erosion brought to the notice of appropriate authorities by the communities?																		
If yes, was there any action taken?																		
If no, why was action not taken?																		
Any additional comments: No Erosion is occurring due to adequate work method																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 4 Air Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 14+000	St. 14+000	St. 14+000	St. 14+000	St. 14+000	St. 14+000
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of air pollution?																		
Dust from road	✓			✓			✓			✓			✓			✓		
Dust from stock piled materials																		
Generator, batching plant emissions																		
Vehicular emissions																		
Is the problem significant enough to warrant attention?		✓			✓			✓			✓			✓			✓	
If yes, did the contractor take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
a. Periodic water sprays on road surface / borrow pits			✓			✓			✓			✓			✓			✓
b. Vehicle tire washing facilities at borrow pits and other locations																		
c. Speed limit enforced on project vehicles			✓			✓			✓			✓			✓			✓
d. Vehicles speeding checked by posting signs on roads, and awareness raising of staff and local communities																		
e. Covering of stock piled materials																		
f. Vehicles regularly maintained			✓			✓			✓			✓			✓			✓

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
g. Equipment regularly maintained			✓			✓			✓			✓			✓			✓
Is air pollution creating problems for the surrounding communities?		✓			✓			✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 5 Water Pollution (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in Sub Decree on Water Pollution Control, No. 27 ANRK.BK, April 06, 1999)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of water contamination?																		
1.1 Surface Water (stream, pond etc.)																		
disposal of cut spoil into water body or on slope leading to water body																		
discharge of wastewater from camp into fresh water body																		
road run-off into water body																		
discharge of used oil, fuel, grease, etc. into water body																		
1.2 Groundwater																		
leakage of oil, fuel, wells, etc. on land resulting in contamination of ground water and wells																		
any other reason																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact long term?																		
If yes, comment:																		
Can it be ratified by mitigatory measures?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, what type of mitigatory measures should be taken?																		
Did community bring the problem to the notice of authorities?																		
Has action been taken to counter the problem? Is it effective?																		
Additional comments: No contamination																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 6 Agriculture (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Law on Agriculture made by MAFF)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the impact of project activities on agriculture activities?																		
road encroachment on paddy / agricultural land																		
borrow pit located on agricultural land																		
spoil dump located on agricultural land																		
diversion of water channels and road construction resulting in inundation of agricultural land																		
irrigation channels broken / diverted due to project activities																		
oil, grease and fuel road run-off contaminating agricultural fields																		
any other project activities resulted in destruction of agricultural land																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		
If yes, how?																		
Is the impact temporary?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, when and how could it be corrected?																		
Is the contractor using any insecticides on the site which adversely affect farmland?																		
If yes, comment:																		
Is the community satisfied with the measures taken by the contractor to protect farmland?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect farmland?																		
If no, what is being suggested by the local administration?																		
Any additional comments: Access road are property constructed and maintained																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 7 Land Contamination (None)

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What are the impacts of project activities on land?																		
road run-off of oil, grease and fuel contaminating land																		
fuel oil / used oil / grease spill on land in equipment yards / camps sites																		
indiscriminate discharge of waste water on land																		
indiscriminate disposal of solid waste																		
any other project activities resulting in land contamination																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		
If yes, what type pf mitigatory measures should have been taken?																		
Is the impact temporary?																		
If yes, when and how could it be corrected?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the community satisfied with the measures taken by the contractor to protect agricultural activities?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect agricultural																		
If no, what is being suggested by the local administration?																		
Did the community allow the use of their land for borrow pit or any other purpose?																		
If yes, what was the motivation behind it?																		
If no, did the contractor take permission from the land owner and local administration for the specific use?																		
Any additional comments: Compensation of Affected land are negotiated and paid to owner prior to site possession.																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 8 Cultural Heritage (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in "Law on Protection of Cultural and National Heritage", (1996)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Does the project area have any cultural heritage, archaeological, historical or religious sites?		✓			✓			✓			✓			✓			✓	
If yes, are they affected in any way by the project activities?		✓			✓			✓			✓			✓			✓	
If yes, how?																		
Did the concerned authorities and the contractor take any appropriate measures to protect the site?		✓			✓			✓			✓			✓			✓	
If yes, what are the measures taken?																		
Are the communities satisfied with the measures taken?																		
Is the community satisfied with the measures taken by the contractor to protect land?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect land?																		
If no, what is being suggested by the local administration?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 9 Noise Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check weekly or in response to complaint.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of noise pollution?																		
vehicles on road	✓			✓			✓			✓			✓			✓		
Generators, construction plant	✓			✓			✓			✓			✓			✓		
Construction vehicles	✓			✓			✓			✓			✓			✓		
vibration from equipment	✓			✓			✓			✓			✓			✓		
vibration from road vehicles	✓			✓			✓			✓			✓			✓		
vibration from explosive blasting																		
Is the problem significant enough to warrant attention?		✓			✓			✓			✓			✓			✓	
If yes, did the contractor / consultant take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
vehicles regularly maintained and silencers checked			✓			✓			✓			✓			✓			✓
speed limit enforced on project vehicles			✓			✓			✓			✓			✓			✓
construction equipment maintained and silenced			✓			✓			✓			✓			✓			✓
compressors and generators operated with silencing panels closed			✓			✓			✓			✓			✓			✓
awareness raising of staff over causing nuisance to local communities			✓			✓			✓			✓			✓			✓

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
blasting at fixed times and communities notified																		
Avoid undertaking construction activities and blasting close to communities at night			✓			✓			✓			✓			✓			✓
Is noise pollution creating problems (health, aesthetic & nuisance) for the surrounding communities?		✓			✓			✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 10 Drainage and Flooding

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: As required						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300	St. 12+300
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the flooding extensive or not?		✓			✓			✓			✓			✓			✓	
If yes, give details:																		
Have contractors activities caused flooding or blocked drains?		✓			✓			✓			✓			✓			✓	
If yes, give details:																		
Have cross drainage structures been built in correct location as shown in contract?																		
If no, give details:																		
Are cross drainage structures "as built" same as in "detailed design"?																		
If no, give details:																		
Any other issues																		
If yes, give details																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 11 Construction Camps Closure

(N.B. There is no specific regulation for this activity.)

Project Site: Improvement of PR314D from Svay Teab to Prey Vor 25.20km						
Observer: Dang Peng						
Frequency: Check at closure of camp.						
Date / Time:	Jan 05, 2015/ 8:00am	Feb 15, 2015/ 8:00am	Mar 15, 2015/ 8:00am	Apr 15, 2015/ 8:00am	May 15, 2015/ 8:00am	Jun 15, 2015/ 8:00am
Location / Road Distance:	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400	St. 58+400
Weather Condition:	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains	Intermittent Rains

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?		✓			✓			✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Has the camp / yard been properly cleared of all debris and revegetated?	✓			✓			✓			✓			✓			✓		
If no, list what was not done properly:																		
Was the wastewater disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it was being disposed and what were the impacts:																		
Were septic tanks installed? Have they been removed?		✓			✓			✓			✓			✓			✓	
If no, why not?																		
Was solid waste disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it was being disposed and the impacts of such disposal:																		
Was attention being paid to housekeeping?	✓			✓			✓			✓			✓			✓		
If no, comment on what was not being done:																		
Have all the contractor equipments being removed from the campsite / yard?		✓			✓			✓			✓			✓			✓	

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, have all appropriate precautions been taken to avoid water and land contamination?																		
Has the scrap metal from vehicle maintenance being disposed of properly?	✓			✓			✓			✓			✓			✓		
If no, comment on how it is to be disposed:																		
Has all fuel storage been removed from the site?		✓			✓			✓			✓			✓			✓	
If no, comment on how the surrounding area is being affected: Site in used																		
Have all general offices and staff dwellings been removed?		✓			✓			✓			✓			✓			✓	
If no, comment on if they are to be handed over to new owner or other plans: Site in use																		
Does the community have any issues with the camp closure?		✓			✓			✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

Appendix C- Checklist of EMP Implementation for Contract CW-C

ENVIRONMENTAL MONITORING CHECK LIST

March-June 2015

Provincial Road Improvement Project

ADB Loan No.2839-CAM (SF)/8254-CAM

Contract Package CW-C: Improvement of PR150B, NR53 and PR151B

Semi-Annual Environmental Monitoring Report

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CHECKLIST 1 Construction Camps

(N.B. There is no specific regulation for this activity.

"Good Housekeeping" must be observed and "General Industry Practice" followed)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly during preparation of camp, at opening of camp, then weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?								✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the camp / yard being properly maintained?							✓			✓			✓			✓		
If no, list what is not being done properly:																		
Is the wastewater being disposed of properly?							✓			✓			✓			✓		
If no, comment on how it is being disposed and what are the impacts: If no, comment on. Have septic tanks been installed? Are they working correctly, that is not overflowing, or emitting smell?																		
Is the solid waste being disposed off properly?							✓			✓			✓			✓		
If no, comment on how it is being disposed and the impacts of such disposal:																		
Is attention being paid to "Good housekeeping"?							✓			✓			✓			✓		
If no, comment on what is not being done:																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Are the contractor's vehicles being maintained at the campsite / yard?							✓			✓			✓			✓		
If yes, are appropriate precaution taken to avoid water and land contamination?																		
Is the waste from vehicle maintenance being disposed off properly?							✓			✓			✓			✓		
If no, comment on how it is being disposed:																		
Is the fuel storage area properly surfaced and has a containment kerb around it?							✓			✓			✓			✓		
If no, comment on how the surrounding area is being affected:																		
Are occupational health and hygiene precautions being taken?							✓			✓			✓			✓		
If no, comment on where they are being neglected: Bound wall to be constructed																		
Does the community have any issues with the camp?								✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 2 Borrow Pits / Quarries

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly during preparation of borrow pit, at opening, then weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the borrow pit / quarry located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?								✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Is the borrow pit / quarry being properly maintained?							✓			✓			✓			✓		
If no, state what is not being done :																		
Is there adverse visual impact due to the borrow pit?								✓			✓			✓			✓	
If yes, comment how:																		
Is borrow pits / quarries excavation / mining adequately employing drainage and fill methodology to avoid any water pools formation during rains?								✓			✓			✓			✓	
If no, comment: Borrow pit shall be utilized by owner for importing water for domestic used.																		
Is the borrow pits / quarry properly rehabilitated at least partially before the start of the rainy season?							✓			✓			✓			✓		
If no, comment on what needs to be done:																		
Are there any signs of erosion and instability?								✓			✓			✓			✓	
If yes, what seems to be the reason?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Are the cut faces stabilized with appropriate materials and methods?							✓			✓			✓			✓		
If no, what are the impacts?																		
Is the borrow pit / quarry to be closed and rehabilitated?								✓			✓			✓			✓	
If yes, Is there a closure plan?																		
Are the borrow pit / quarry operations creating excessive dust / noise?								✓			✓			✓			✓	
If yes, are any measures being taken to minimize dust and noise?																		
Do the communities have any concerns / issues with borrow pit / quarry during operation or after closure?								✓			✓			✓			✓	
If yes, what are those concerns / issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 3 Erosion of Slopes

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is / are the reason(s) for erosion / landslides / instability?																		
a. Improper design / stripping of cut faces								✓			✓			✓			✓	
b. Improper drainage								✓			✓			✓			✓	
c. Clearing of vegetation / lack of gabions, geotextiles								✓			✓			✓			✓	
d. Improper leveling after earth removal								✓			✓			✓			✓	
e. Are the slopes properly stabilized before the start of the rainy season?							✓			✓			✓			✓		
f. Inadequate water channel diversion, or								✓			✓			✓			✓	
g. A combination of some of the reasons above								✓			✓			✓			✓	
Is remedial action required?								✓			✓			✓			✓	
If yes, comment: Correct design, correct drainage, proper leveling after earth removal.																		
Did the erosion / landslide / instability cause any damage?								✓			✓			✓			✓	
If yes, what was the nature of the damage?																		
Did the contractor take appropriate mitigatory measures, pre and post erosion / instability / landslides, to avoid / counter the problem?							✓			✓			✓			✓		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If no, why did the contractor not consider it necessary to take appropriate mitigatory measures?																		
Was the erosion brought to the notice of appropriate authorities by the communities?																		
If yes, was there any action taken?																		
If no, why was action not taken?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 4 Air Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of air pollution?																		
a. Dust from road							✓			✓			✓			✓		
b. Dust from stock piled materials																		
c. Generator, batching plant emissions																		
d. Vehicular emissions																		
Is the problem significant enough to warrant attention?								✓			✓			✓			✓	
If yes, did the contractor take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
a. Periodic water sprays on road surface / borrow pits									✓			✓			✓			✓
b. Vehicle tire washing facilities at borrow pits and other locations																		
c. Speed limit enforced on project vehicles									✓			✓			✓			✓
d. Vehicles speeding checked by posting signs on roads, and awareness raising of staff and local communities																		
e. Covering of stock piled materials																		
f. Vehicles regularly maintained									✓			✓			✓			✓

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
g. Equipment regularly maintained									✓			✓			✓			✓
Is air pollution creating problems for the surrounding communities?								✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 5 Water Pollution (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in Sub Decree on Water Pollution Control, No. 27 ANRK.BK, April 06, 1999)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of water contamination?																		
1.1 Surface Water (stream, pond etc.)																		
disposal of cut spoil into water body or on slope leading to water body																		
discharge of wastewater from camp into fresh water body																		
road run-off into water body																		
discharge of used oil, fuel, grease, etc. into water body																		
1.2 Groundwater																		
leakage of oil, fuel, wells, etc. on land resulting in contamination of ground water and wells																		
any other reason																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact long term?																		
If yes, comment:																		
Can it be ratified by mitigatory measures?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
If yes, what type of mitigatory measures should be taken?																		
Did community bring the problem to the notice of authorities?																		
Has action been taken to counter the problem? Is it effective?																		
Additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 6 Agriculture (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Law on Agriculture made by MAFF)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the impact of project activities on agriculture activities?																		
road encroachment on paddy / agricultural land																		
borrow pit located on agricultural land																		
spoil dump located on agricultural land																		
diversion of water channels and road construction resulting in inundation of agricultural land																		
irrigation channels broken / diverted due to project activities																		
oil, grease and fuel road run-off contaminating agricultural fields																		
any other project activities resulted in destruction of agricultural land																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		
If yes, how?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the impact temporary?																		
If yes, when and how could it be corrected?																		
Is the contractor using any insecticides on the site which adversely affect farmland?																		
If yes, comment:																		
Is the community satisfied with the measures taken by the contractor to protect farmland?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect farmland?																		
If no, what is being suggested by the local administration?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 7 Land Contamination (None)

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What are the impacts of project activities on land?																		
road run-off of oil, grease and fuel contaminating land																		
fuel oil / used oil / grease spill on land in equipment yards / camps sites																		
indiscriminate discharge of waste water on land																		
indiscriminate disposal of solid waste																		
any other project activities resulting in land contamination																		
Is the impact significant enough to warrant mitigatory measures?																		
If yes, provide necessary details:																		
Is the impact permanent?																		
If permanent, could it have been avoided by taking appropriate mitigatory measures?																		
If yes, what type pf mitigatory measures should have been taken?																		
Is the impact temporary?																		
If yes, when and how could it be corrected?																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the community satisfied with the measures taken by the contractor to protect agricultural activities?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect agricultural activities?																		
If no, what is being suggested by the local administration?																		
Did the community allow the use of their land for borrow pit or any other purpose?																		
If yes, what was the motivation behind it?																		
If no, did the contractor take permission from the land owner and local administration for the specific use?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 8 Cultural Heritage (None)

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in "Law on Protection of Cultural and National Heritage", (1996)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Does the project area have any cultural heritage, archaeological, historical or religious sites?								✓			✓			✓			✓	
If yes, are they affected in any way by the project activities?																		
If yes, how?																		
Did the concerned authorities and the contractor take any appropriate measures to protect the site?								✓			✓			✓			✓	
If yes, what are the measures taken?																		
Are the communities satisfied with the measures taken?																		
Is the community satisfied with the measures taken by the contractor to protect land?																		
If no, how and with what measures can it be improved?																		
Is the local administration satisfied with the measures taken by the contractor to protect land?																		
If no, what is being suggested by the local administration?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 9 Noise Pollution

(N.B. The contractor must carry out his activities to ensure compliance with the regulations stated in draft Sub Decree on Air and Noise Pollution Control)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check weekly or in response to complaint.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
What is the nature of noise pollution?																		
vehicles on road							✓			✓			✓			✓		
Generators, construction plant																		
Construction vehicles							✓			✓			✓			✓		
vibration from equipment																		
vibration from road vehicles																		
vibration from explosive blasting																		
Is the problem significant enough to warrant attention?								✓			✓			✓			✓	
If yes, did the contractor / consultant take appropriate measure to mitigate the problem?																		
What is / are the measures taken?																		
vehicles regularly maintained and silencers checked									✓			✓			✓			✓
speed limit enforced on project vehicles									✓			✓			✓			✓
construction equipment maintained and silenced									✓			✓			✓			✓
compressors and generators operated with silencing panels closed																		
awareness raising of staff over causing nuisance to local communities																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
blasting at fixed times and communities notified																		
Avoid undertaking construction activities and blasting close to communities at night																		
Is noise pollution creating problems (health, aesthetic & nuisance) for the surrounding communities?								✓			✓			✓			✓	
If yes, what type of problems?																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 10 Drainage and Flooding

(N.B. There is no specific regulation for this activity)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: As required						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the flooding extensive or not?								✓			✓			✓			✓	
If yes, give details:																		
Have contractors activities caused flooding or blocked drains?								✓			✓			✓			✓	
If yes, give details:																		
Have cross drainage structures been built in correct location as shown in contract?																		
If no, give details: Not yet start																		
Are cross drainage structures "as built" same as in "detailed design"?																		
If no, give details:																		
Any other issues											✓			✓			✓	
If yes, give details																		

Inspector's name and signature:

Resident Engineer, KCI

CHECKLIST 11 Construction Camps Closure

(N.B. There is no specific regulation for this activity.)

Project Site: Improvement of PR150B, NR53 and PR151B						
Observer: Mr. Uth Bora						
Frequency: Check at closure of camp.						
Date / Time:			Mar 01, 2015/ 8:00am	Apr 03, 2015/ 8:00am	May 05, 2015/ 8:00am	Jun 05, 2015/ 8:00am
Location / Road Distance:			KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km	KCH & KSP, 70.63km
Weather Condition:			Sunny	Sunny	Sunny	Sunny

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Is the camp / yard located in a protected area, next to a community water source or any other ecologically or otherwise sensitive area?								✓			✓			✓			✓	
If yes, comment on the adverse impacts on the environment:																		
Has the camp / yard been properly cleared of all debris and revegetated?							✓			✓			✓			✓		
If no, list what was not done properly:																		
Was the wastewater disposed of properly?							✓			✓			✓			✓		
If no, comment on how it was being disposed and what were the impacts:																		
Were septic tanks installed? Have they been removed?								✓			✓			✓			✓	
If no, why not? When it full pump out.																		
Was solid waste disposed of properly?							✓			✓			✓			✓		
If no, comment on how it was being disposed and the impacts of such disposal:																		
Was attention being paid to housekeeping?																		
If no, comment on what was not being done:																		
Have all the contractor equipments being removed from the campsite / yard?							✓			✓			✓			✓		
If yes, have all appropriate precautions been taken to avoid water and land contamination? Yes																		

Checklist Question	January			February			March			April			May			June		
	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data	Yes	No	Add-data
Has the scrap metal from vehicle maintenance being disposed of properly?							✓			✓			✓			✓		
If no, comment on how it is to be disposed:																		
Has all fuel storage been removed from the site?							✓			✓			✓			✓		
If no, comment on how the surrounding area is being affected:																		
Have all general offices and staff dwellings been removed?							✓			✓			✓			✓		
If no, comment on if they are to be handed over to new owner or other plans:																		
Does the community have any issues with the camp closure?								✓			✓			✓			✓	
If yes, what are the issues?																		
Any additional comments:																		

Inspector's name and signature:

Resident Engineer, KCI