Environmental Assessment and Review Framework

October, 2013

VIE: INTEGRATED RURAL DEVELOPMENT SECTOR PROJECT IN THE CENTRAL PROVINCES (IRDSPCP)

Loan 2357(SF)

Prepared by Central Project Management Unit – Agriculture Project Management Board – Ministry of Agriculture & Rural Development for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 20 September 2013)

Currency unit	–	Vietnamese Dong (VND)
VND 1.00	=	$ 0.000047
$1.00	=	VND 21,080

ABBREVIATIONS

ADB	-	Asian Development Bank
CEP	-	Commitment on Environmental Protection
CPC	-	Communal People's committee
CPMU	-	Central Project Management Unit
CSB	-	Commune Supervision Board
DARD	-	Department of Agriculture and Rural Development
DONRE	-	Department of Natural Resources and Environment
DPC	-	District Peoples Committee
EIAR	-	Environmental Impact Assessment Report
EMP	-	Environmental Management Plan
IEE	-	Initial Environmental Examination
IMC	-	Independent Monitoring Consultant
IRDPCP	-	Integrated Rural Development Project in Central Provinces
MARD	-	Ministry of Agriculture and Rural Development
MONRE	-	Ministry of Natural Resources and Environment
PC	-	Peoples Committee
PPC	-	Provincial Peoples Committee
PMU	-	Project Management Unit
PPMU	-	Provincial Project Management Unit
SST	-	Subproject Support Team
TOR	-	Term of References
UXO	-	Unexploded Ordnance

NOTE{S}

(i) In this report, "$" refers to US dollars.

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CONTENTS

ENVIRONMENTAL ASSESSMENT AND REVIEW FRAMEWORK (EARF)

ADDITIONAL FINANCING OF THE INTERGRATED RURAL DEVELOPMENT SECTOR PROJECT IN THE CENTRAL PROVINCES (IRDSPCP)

I. INTRODUCTION

A. The Project

1. Loan 2357(SF) for the Integrated Rural Development Sector Project in the Central Provinces (IRDSPCP) was approved by ADB on 15 October 2007. The total cost of the Project was estimated at $168.2 million and is jointly financed by ADB and Agence Francaise de Developpement (AFD). The IRDSPCP focuses on upgrading and rehabilitating rural infrastructure (rural roads and irrigation systems, flood control, markets and other key infrastructure). To date, 129 subprojects have either been completed or are nearing completion. Review missions had determined that the quality of construction of subprojects was good. The executing agency (EA) has developed the expertise needed to effectively implement the project and significant benefits are already accruing.

2. At the request of the Government, the potential for additional financing was investigated during the Mid-Term Review in 2011 and two review missions in 2012. About 39 new subprojects were found eligible for consideration in the additional financing. The amount of $70 million has been recommended and included in the country program for ADB Board consideration in 2013. The IRDSPCP – Additional Financing (the Project) aims to rehabilitate and upgrade deteriorated critical productive rural infrastructure in support of the Government of Viet Nam's new National Target Program for Rural Development (NRD).

3. Given the limited environmental impacts expected from the subprojects, the Project has been categorized as 'B' for environment in accordance with the Safeguard Policy Statement (SPS, 2009)[1] of the Asian Development Bank (ADB). This environmental assessment and review framework (EARF) is prepared to guide the screening of subprojects, set out institutional arrangements, responsibilities and procedures in relation to environmental management and monitoring, and define environmental assessment requirements complying with the applicable laws and regulations of the Government and with ADB SPS (2009).

B. Subproject Types to be Assessed

1. In consultation with the relevant provincial government and field investigation by the CPMU, a total of 23-24 eligible subprojects were initially identified based on 7 screening criteria which are focused on social economic development, safeguards, integrated development model, feasibility and sustainability. The types of subprojects are as follows:

(i) Small & medium-sized dam and reservoir improvements e.g., spillways, head-works, reservoir walls, and leakage control;

[1] ADB. 2009. Safeguard Policy Statement. Manila

(ii) Rehabilitation of primary and secondary irrigation canals and river bank stabilization. Wherever possible key strategic investments such as the lining of critical lengths of canal or the reinforcing of existing water control structures will be chosen; and

(iii) Rehabilitation of commune to district, and inter-commune roads to improve linkages between higher level alignments (provincial and national routes) and lower level commune to village and inter-village roads. In addressing key issues of sustainability, designs will take into account the increased intensity and frequency of climatic hazards anticipated to result from global climate change, the local geology and terrain, potential change in utilization patterns (type and volume of traffic), and the longer-term availability of recurrent expenditure for operations and maintenance (O&M).

II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

A. Legal Framework

2. The principles and procedures for the environmental assessment of projects in Viet Nam are founded on the Law on Environment Protection (LEP) issued in 1993, revised in 2005 and put into effect in 2006. The LEP provides the basis for the requirement for environmental assessment, key roles and responsibilities, and requirements for public consultation. Under LEP, the following decree and circular on environmental assessment and institutional arrangements for the approval of environmental assessments:

(i) Decree No. 29/2011/ND-CP dated April 18th 2011 of Vietnamese Government on regulation on strategic environmental impact assessment, environmental commitment: requires environmental assessments to be prepared concurrently with project Feasibility Studies/ Investment Reports, sets out the required degree of environmental assessment and establishes requirements for appraisal of environmental assessment documents by the GOV (i.e. a Strategic Environmental Assessment (SEA); Commitment on Environmental Protection (CEP) or an Environmental Impact Assessment Report (EIAR).

(ii) Circular No. 26/2011/TT-BTNMT dated July 18th, 2011 of Ministry of Natural Resources and Environment for the Guidelines on SEA, EIAR and CEPs: sets out the required structure and content of CEPs, EIARs and SEA and provides further details of the requirements for public consultation activities.

B. Level and Process of Environmental Assessment and public disclosure

3. In accordance to the Decree No. 29/2010/ND-CP an Environmental Assessment reports are required for all development project. There are two types of environmental assessment reports are used: EIAR or a CEP. In broad terms, an EIAR is required for projects of the type and scale listed in Annex II of the Decree No. 29/2010/ND-CP. These relate to projects deemed to have the potential to cause adverse impacts, and include those located in protected areas or other areas that are environmentally sensitive (including proposed protected areas). EIAR is not necessarily equivalent to the category A according to the ADB's safeguard policy. A subproject which requires EIAR may be classified as environmental category B according to the ADB's Safeguard Policy if the proposed type and scale of interventions match with those listed in the Decree No. 29/2010/ND-CP.

4. Once EIARs are prepared, they will be submitted to the Vietnam (Central) Environmental Administration (VEA) or Provincial Environment Administration (PEA) that provides certification on approval[2]. The PPMPU submits copies of the approved EIAR and certification to the Commune Peoples' Committees. The PPMU also prepares a summary of the report for public display at the relevant Commune People's Committee office. During the course of subproject implementation, the PPMU is required to submit details of construction and reports on compliance with mitigation and monitoring requirements in the EIAR, to the Department of Agriculture and Rural Development (DARD).

5. Smaller projects without the potential for significant adverse impacts will be subject to a lesser level of assessment in the form of CEP. CEPs are required to be submitted for appraisal at the time of Subproject Investment Report preparation. Chapter 4 of No. 29/2011/ND-CP and Chapter 6 of circular 26/2011/TT-BTNMT details the procedures for CEPs. Under the article in these chapters, the authority that receives and certifies the CEP is the District People's Committee of the locality in which the subproject is situated. Decree No. 29/2011/NĐ-CP regulates that for the projects are implemented in 2 (two) districts or more but within one province, the project owners can register CEP at one of the district people's committee where the most convenient for the owners**.** The content and format of the CEP are presented in the Annex 5.2 to circular 26/2011/TT-BTNMT. The CEP must include information on mitigation measures that will be taken. The CEP obliges the PPC to ensure that the specified mitigation is carried out during project implementation. On receipt of the CEP, it is registered by the Commune People's Committee.

6. The essential differences between preparation processes for an CEP and an EIAR are: (i) the structure and content of the report (ii) the level of investigation, analysis and reporting required and (iii) the requirement for formalized consultation within the EIAR. And finally once CEPs are required under Circular 26:2011/TT-BTNMT the public consultation and disclosure are not compulsory for CEP[3]. However, the public consultation and disclosure are required by ADB[4]. Therefore the IEE for subproject has to combine CEP with the ADB's IEE.

III. Anticipated Environmental Impacts

7. At the time of appraisal an initial environmental examination (IEE) was conducted based on the review of selected completed subprojects under the earlier Rural Infrastructure Sector Project (RISP) upon which the Project was modelled plus and one new representative subproject to identify potential impacts, appropriate mitigation measures, and monitoring mechanisms. It concluded that serious negative environmental impact was unlikely since subprojects will primarily entail up-gradation of small- and medium-scale infrastructure. In general, existing rights of way will be used so there will be little land clearing, and structures are generally simple so there will be minimal disturbance. The following comments can be made in relation to the potential environmental impacts:

[2] Annex III of the Degree No. 29/2011/NĐ-CP provided list of project, the EIAR of which will be reviewing and providing certification on approval; For those project belonged to the Annex II but not belonged to the Annex III the PEA will reviewing and providing certification on approval.

[3] In the public consultation is required for SEA and EIAR only.

[4] ADB. 2009. Safeguard Policy Statement. Manila. Under this policy the ' Information Disclosure, Consultation, and Participation' is required for all environment category A and B projects.

(i) Primary environmental concern during technical design phase will be: dam safety issues including soil erosion and reservoir sedimentation;

(ii) Activities of primary concern during construction will be (i) the provision of filling material from borrow sites and the disposal of excavated material, (ii) the impacts on surface and ground-water quality, (iii) public nuisance and safety (iv) changes to property access, and (v) traffic disruption; and

(iii) The main environmental concern during operation phase will be: (i) the effects of intensification of agriculture, such as increased use of pesticides and fertilizers; (ii) risks associated with poor scheme operation, such as inadequate regulation of water flows, leading to uneven distribution among users and soil inundation. Engineering design for all civil engineering structures will need to accommodate greater severity and frequency of extreme environmental events. No adverse effects on protected areas or archeologically significant structures are expected as there are no such areas. The increased availability of water during the dry season reduces risks of environmental damage to aquatic and riparian ecosystems.

8. The Project will strengthen the capacity of the local government officials, Irrigation Management Company and MARD by (i) preparing productive rural infrastructure condition inventories and a program to update them; (ii) using whole asset life analysis with realistic maintenance assumptions as the basis for design and sustainable management; and (iii) delivering the formal and non-formal training to upgrade their qualifications and improve their knowledge on productive rural infrastructure.

9. The Project also meets the community and local needs by i) increasing accessibility throughout the rural areas of the Central Region, (ii) improving levels of agriculture and aquaculture production, (iii) lowering costs of agricultural inputs and consumer commodities, (iv) enhancing access to markets and services, (v) supporting responsive and decentralized investment planning, and (vi) broadening range of economic opportunities both within and beyond the agricultural sector. Awareness raising and stakeholder training will enhance community's incentive to sustain the improved assets and improve their use and management.

IV. ENVIRONMENTAL ASSESSMENT FOR SUBPROJECTS

A. Responsibilities and Authorities

10. The Executing Agency (EA) will be MARD. The Central Project Management Unit (CPMU) will retain responsibilities for central level project management and coordination. The Six Provincial People's Committees (PPCs) will be the Implementing Agencies (IAs). The PPCs will assign Provincial Departments to establish Provincial Project Management Units (PPMUs). The PPMUs will be responsible for carrying out the feasibility studies, detailed design, day-to-day management of sub-project implementation, and for arranging environmental assessment and review of the subprojects. Commune Supervision Board (CSBs) will be engaged to monitor construction activities. The CPMU has two assigned safeguard staff, one each for environment and social safeguards. The CPMU has gained project management and safeguard capacity through implementing phase 1 of IRDSPCP and similar on-going ADB financed projects. The

CPMU has developed and been using the IEE template for the on-going subprojects. They have sufficient knowledge on the environmental safeguard requirements in terms of scope and approval procedures. The PPMU of six participating provinces have gained knowledge and understanding on the environmental safeguard preparation and procedures for conducting environmental assessment of subprojects through implementing the on-going project.

11. **Subproject Screening and Categorization.** Subproject selection and screening ensures that only subprojects categorized as ADB Category B or C will be included in the list of eligible subprojects for possible funding under the proposed Project. It is anticipated that all eligible subprojects will fall into Category B, whereby some adverse environmental impacts are expected, but of a lesser. Subprojects that will comply with environmental category B under the ADB's classification system will be eligible. Subprojects located in the protected areas or involve significant involuntary resettlement (i.e. more than 200 affected persons will be resettled or lose 10% or more of their productive assets), were automatically excluded. Safeguard consultants appointed by the CPMU will carry out the safeguard screening and determine the need for IEE/CEP or IEE/EIAR.

12. **IEE/CEP Preparation.** An IEE/CEP needs to be prepared if a subproject is classified as environmental category B. IEE needs to include an environmental management plan (EMP). The CPMU will select an appropriate national consulting firm to prepare IEE and CEP with support from PPMUs following the IEE template developed and utilized under the IRDSP project - phase I. The IEE/CEP should include the subproject scope, baseline information, materials to be used construction techniques, impact assessment, mitigation and environmental monitoring, and a minute of public consultation. The content and format of the IEE/CEP report should satisfy the requirements of both ADB and the Government of Viet Nam (CEP)[5]. Adequate public consultation needs to be carried out to share and get feedback on the initial findings of the IEE/CEP.

13. **Review of IEEs:** On completion, IEE/CEP reports will be reviewed initially by the PPMU and if satisfactory, forwarded to the CPMU for review (with the assistance of national safeguard review consultants). Once found satisfactory by the CPMU, IEE/CEP reports will be forwarded to relevant District PC for approval. The environmental assessment and review procedures for IEE/CEP are as follows:

(i) PPMU reviews IEE/CEP reports, if satisfactory, forward to CPMU for review;

(ii) If found satisfactory, CPMU will forward to relevant District PC for its endorsement;

(iii) CPMU will submit the first IEE/CEP for ADB review. If the quality of the first IEE/CEP is satisfactory, only IEEs of subprojects with cost above $3 million will be submit to ADB for prior review.

[5] Most of the subprojects will involve rehabilitation or update of existing infrastructure. Under Circular 29/2011/NĐ-CP, subprojects to be financed under the Project are likely to be classified as Category II, corresponding to environmental category "B" or "C" under ADB's policy. Therefore, a simplified assessment – Commitment on Environmental Protection (IEE/CEP) will be required.

B. Environmental Monitoring Requirements

14. Environmental monitoring consists of environmental effects and compliance monitoring (Attachment 2). Environmental effects monitoring includes water quality monitoring parameters.

15. Environmental Management Plan (EMP) needs to be included in all IEE/CEP reports. The EMP summarizes all mitigation measures (in the pre-construction, construction and operations phases) that have been identified in respect of potential environmental impacts. For each mitigation measure, the EMP must list the impact to be mitigated, describe the mitigation measure, and estimate the cost or allocate responsibility for meeting the cost, and state the agency responsible for implementation of each mitigation measure. For guidance, an EMP is included with the IEE/CEP for each core subproject.

16. EMP is used in the preparation of bidding documents for the construction works, ensuring that bidders are aware of the environmental mitigation to be undertaken during construction, and to enable them to price their bids accordingly. The EMP also serves to guide the agencies responsible for project operation in exercising required mitigation measures.

V. PUBLIC CONSULTATION, INFORMATION DISCLOSURE AND GRIEVANCE

17. **Public Consultation and Disclosure.** Public consultation shall include discussions with members of project beneficiary groups, affected persons and commune officials, as a part of IEE preparation, in order to ascertain any concerns that may need to be addressed. The consultation procedures shall be conducted as set out in circular 26/2011/TT-BTNMT and include the following aspects as per the ADB's SPS (2009):

(i) A summary of the proposed works under the subproject;

(ii) A summary of subproject objectives and likely positive and negative environmental impacts, covering the impacts in design, construction and operation phases for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;

(iii) Invitation for feedback in respect of any areas of concern that the public may have, and suggested means of implementation; Summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples;

(iv) Acceptability of the proposed works to the public; and

(v) Request for information on the known occurrence of unexploded ordinance in the area where the scheme components will be built and facilitating participation of affected people during project implementation.

18. Dates, attendees, topics covered and conclusions should be recorded and included with the IEE report. Once the IEE is completed, it should be made available to the public for a period of at least 30 days. For this purpose, the IEEs should be prepared in English and in Vietnamese

and distributed to the District or Commune People's Committees, and made available for public review. All IEEs will be submitted to ADB for disclosure on the ADB website

19. **Grievance Redress Mechanism.** The grievance redress mechanism (GRM) developed by CPMU is in place (Attachment 3) to ensure that any complaint raised by the community related to adverse environmental impacts will be addressed in a timely manner. In each subproject commune, Community Supervision Board will be set up and facilitate the timely facilitation and mediation of the grievance process.

20. The local government will closely co-ordinate with the Work Operation and Maintenance Unit in order to timely solve the rising problems during the subproject implementation, as well as during the operation and maintenance period.

VI. INSTITUTIONAL ARRANGEMENT AND RESPONSIBILITIES

21. National environmental specialists (8 person month) engaged under the existing Loan Implementation Consultant contract will assist the CPMU and PPMUs to prepare the safeguard documents including IEE reports and necessary environmental clauses in bidding documents and contracts. National environmental specialists to be engaged by a new LIC (20 person months) will assist CPMU and PPMUs to monitor and report the implementation of environmental measures. The proposed Terms of Reference is provided in the PAM.

VII. MONITORING AND REPORTING

A. Environmental Monitoring Programs

22. General environmental safeguard monitoring with associated grievance mechanisms is undertaken, by construction supervision consultant and environmental specialist under LIC during construction phase and by DARD or Operating Company during operation phase, to ensure that the required policies and procedures and plans for minimization of negative environmental impacts. Typical environmental monitoring programs have been developed for each infrastructure type included in IRDPCP-phase II and are included in attachment 2. Environmental monitoring programs have been developed in terms of environmental effects monitoring and environmental compliance monitoring;

23. Environmental effects monitoring is carried out to examine impacts of the subproject in relation to ambient environmental conditions e.g. ambient air, noise, sensitive water bodies, soil and groundwater and sensitive ecosystems etc...

24. Environmental compliance monitoring is carried out to test compliance with operating procedures, technical standards and/or contractor specifications in the EMP e.g. the safety during construction, construction worker camp sanitation and hygiene conditions, wastes including hazardous disposal practices during construction, erosion control etc…

25. The environmental monitoring programs have been developed to reflect the generally low level of environmental impact expected to arise from subproject implementation. Moreover, monitoring methods have been developed in recognition of existing human and technical resource levels and focus on observation based methods with quantitative monitoring recommended for key environmental issues only. For each specific subproject, the PPMU will determine the appropriate level of environmental monitoring that best suits local conditions and the predicted level of environmental impact.

B. Environmental Reporting System

26. Table 1 describes the reporting system that will apply to environmental management activities for each subproject.

Table 1: Environmental Reporting System

Project Phase	Type of Report	Frequency	Responsibility	Submitted To Whom
Construction	**Site Environmental Performance Report** indicating compliance with Site EMP and monitoring results	Monthly	construction supervision consultant	PPMU
	EMP Compliance Report indicating compliance with all subproject's EMPs and monitoring results	Quarterly	PPMU	CPMU
	EMP Compliance Report indicating compliance with all subproject's EMPs and monitoring results	Bi-annually or twice during construction depending on construction duration	CPMU	ADB
	Subproject Environmental Report indicating overall subproject environmental performance and EMP compliance	At completion of subproject	CPMU	ADB
Operation	**EMP Compliance Report: Operation** indicating compliance with subproject EMP commitments during operation	01 year for first two years of operation. Ongoing frequency to be determined based on review after 2 years.	DARD and/or Operating Company	ADB,

Attachment 1: Monitoring of IEE/CEP Implementation

Monitoring Parameter	Monitoring Method	Frequency of Monitoring	Responsibility for Monitoring
Verification of IEE/CEP preparation and approval before commencement of subproject construction	Verification of: (i) IEE/CEP document produced, (ii) GOV certificate issued, (iii) ADB no-objection issued	For all subprojects	PPMU
		For all subprojects	CPMU
Adequacy of IEE/CEP documentation to meet GOV requirements and ADB safeguard requirements	Review of IEE/CEP content to meet GOV safeguard requirements	For all subprojects	PPMU
		For all subprojects	CPMU
Budget and human resources expended on IEE/CEP preparation	Collection of data on (i)consultants fees, (ii) data acquisition and collection fees, (iii) PPMU human resources	Cumulative and average data for all subprojects	CPMU
Adequacy of public consultation / disclosure activities to meet GOV requirements and ADB safeguard requirements	Number and type of public consultation and disclosure events and key issues raised	For all subprojects	PPMU

Attachment 2: Environmental Monitoring

Table 2.1: Environmental Monitoring Program for Rural Road Subprojects

A. ENVIRONMENTAL EFFECTS MONITORING

Target compartment	Parameters	Location	Methods	Frequency	Responsibility
		Construction Stage			
Noise	Noise levels	At nearest residence(s)	Observation, use of noise meter to measure	In response to community complaints	Construction supervision consultant
Ambient air	Dust levels	At nearest residence(s)	Observation; Sampling and analysis	Weekly or during windy conditions	Construction supervision consultant
Water and Soil environment	Sediment loads, rubbish, oil or other visible pollutants	Waterbodies identified in the IEE as being potentially affected by the subproject	Observation; Sampling and analysis	Weekly and after large rain evens	Construction supervision consultant
		Operation Stage			
Surface water quality	BOD, COD, pH, TSS, salinity, coliform, Zn, Cd, Pb, compared to QCVN 08 : 2008/BTNMT	Representative waterbodies receiving road runoff	TCVN methods	2 times per year for first 2 years (1 time in wet season, 1 time in dry season)	DARD and/or Operating Company
Groundwater quality	BOD, COD, pH, TSS, salinity, coliform, Zn, Cd, Pb, compared to QCVN 09 : 2008/BTNMT [6]	Existing groundwater wells in vicinity of subproject	TCVN methods	2 times per year for first 2 years (1 time in wet season, 1 time in dry season)	DARD and/or Operating Company
Air quality	TPM or PM_{10}; NOx; SOx; CO compared to QCVN 05 : 2009/BTNMT [7]	At representative receivers along road alignment	TCVN methods	1 time per year for first 2 years	DARD and/or Operating Company
Noise levels	Day time and night time dB(A) compared to QCVN 26:2010/BTNMT [8]	At representative receivers along road alignment	TCVN methods	1 time per year for first 2 years	DARD and/or Operating Company
Road safety	Number of road accidents and causes and severity of accidents	Along road alignment	Discussions with local authorities	1 time per year for first 2 years	DARD and/or Operating Company

[6] QCVN 09 : 2008/BTNMT National technical regulation on underground water quality

[7] QCVN 05 : 2009/BTNMT, National technical regulation on ambient air quality

[8] QCVN 26:2010/BTNMT National Technical Regulation on Noise

B. ENVIRONMENTAL COMPLIANCE MONITORING

Mitigation Measure	Parameters/ indicator	Location	Methods	Frequency	Responsibility
		Pre-Construction Stage			
UXO clearance	Certification of clearance	Affected areas	Observation	Prior to commencement of site works	PPMU
		Construction Stage			
Erosion and sediment controls	Condition and capacity of controls	Throughout construction site	Observation	After large rain events	Construction supervision consultant
Materials storage	Condition of materials storage areas	Throughout construction site	Observation	Weekly	Construction supervision consultant
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leaks	Throughout construction site	Observation	Random	Construction supervision consultant
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation	Weekly	Construction supervision consultant
Vegetation clearing	Boundaries of vegetation clearing	Areas of sensitive vegetation	Observation	Weekly during clearing works	Construction supervision consultant
Property access	Reinstatement of temporary and permanent accesses	Affected properties	Observation	Once during and once following construction	Construction supervision consultant
Waste disposal	Site cleanliness and condition; temporary waste storage area	Throughout construction site	Observation	Weekly	Construction supervision consultant
Avoidance of heritage items	Boundaries of works in vicinity of heritage items	At affected items	Observation	Once during construction works	Construction supervision consultant
Areas of standing water	Ponded or undrained water	Throughout construction site	Observation	Weekly during rainy season	Construction supervision consultant
Development of borrow areas	Relevant environmental approvals obtained for new sites	Throughout construction area	Review of relevant documentation	Before commencement of resource extraction	PPMU
		Operation Stage			
Erosion or scouring of waterways, areas of cut and fill	Condition of landscaping; stability of cut/fills	At representative sections along road alignment	Observation	6 monthly for first 2 years of operation	DARD and/or Operating Company
Drainage and flooding	Condition of drains, culverts and evidence of flooding of adjacent land use	At representative sections along road alignment	Observation	6 monthly for first 2 years of operation	DARD and/or Operating Company
Ponding of water on road alignment	Evidence of areas of ponded water	At representative sections along road alignment	Observation	During rainy season for first 2 years of operation	DARD and/or Operating Company

Mitigation Measure	Parameters/ indicator	Location	Methods	Frequency	Responsibility
Waste management	Site cleanliness and condition	Throughout subproject area	Observation	6 monthly for first 5 years of operation	DARD and/or Operating Company

Table 2. 2: Environmental Monitoring Program for Irrigation & Water Supply Subprojects

A. ENVIRONMENTAL EFFECTS MONITORING

Target compartment	Parameters	Location	Methods	Frequency	Responsibility
		Construction Stage			
Noise	Noise levels	At nearest residence(s)	Observation, use of noise meter to measure	In response to community complaints	Construction supervision consultant
Ambient air	Dust levels	At nearest residence(s)	Observation; Sampling and analysis	Weekly or during windy conditions	Construction supervision consultant
Water and Soil environment	Sediment loads, rubbish, oil or other visible pollutants	Water bodies identified in the IEE as being potentially affected by the subproject	Observation; Sampling and analysis	Weekly and after large rain evens	Construction supervision consultant
		Operation Stage			
Domestic water supply quality	Parameters identified in Drinking Water Hygienic Standards QCVN 01:2009/BYT[9] / QCVN 02: 2009/BYT[10]	Communities in vicinity of subproject	Observation; Sampling and analysis	6 monthly for first 2 years of operation	DARD and/or Operating Company
Public health	Reported incidence of waterborne diseases	Communities in vicinity of subproject	Interview	6 monthly for first 2 years of operation	DARD and/or Operating Company
Water use conflicts	Reported conflicts in access to water resources	Communities in vicinity of subproject	Direct interview	6 monthly for first 2 years of operation	DARD and/or Operating Company
Surface water quality	BOD, COD, pH, TSS, salinity, Total P, E. coli, coliform, Total N compared to QCVN 08 : 2008/BTNMT	Representative water bodies receiving agricultural runoff from subproject	TCVN methods	2 times per year for first 2 years (1 time in wet season, 1 time in dry season)	DARD and/or Operating Company
Groundwater quality	BOD, COD, pH, TSS, E. coils, coliform, salinity, Total P, Total N	Existing groundwater wells in vicinity of subproject	TCVN methods	2 times per year for first 2 years (1 time in wet season, 1 time in	DARD and/or Operating Company

[9] QCVN 01:2009/BYT National technical regulation on drinking water quality by the Minister for Health
[10] QCVN 02: 2009/BYT National technical regulation on domestic water quality by the Minister for Health

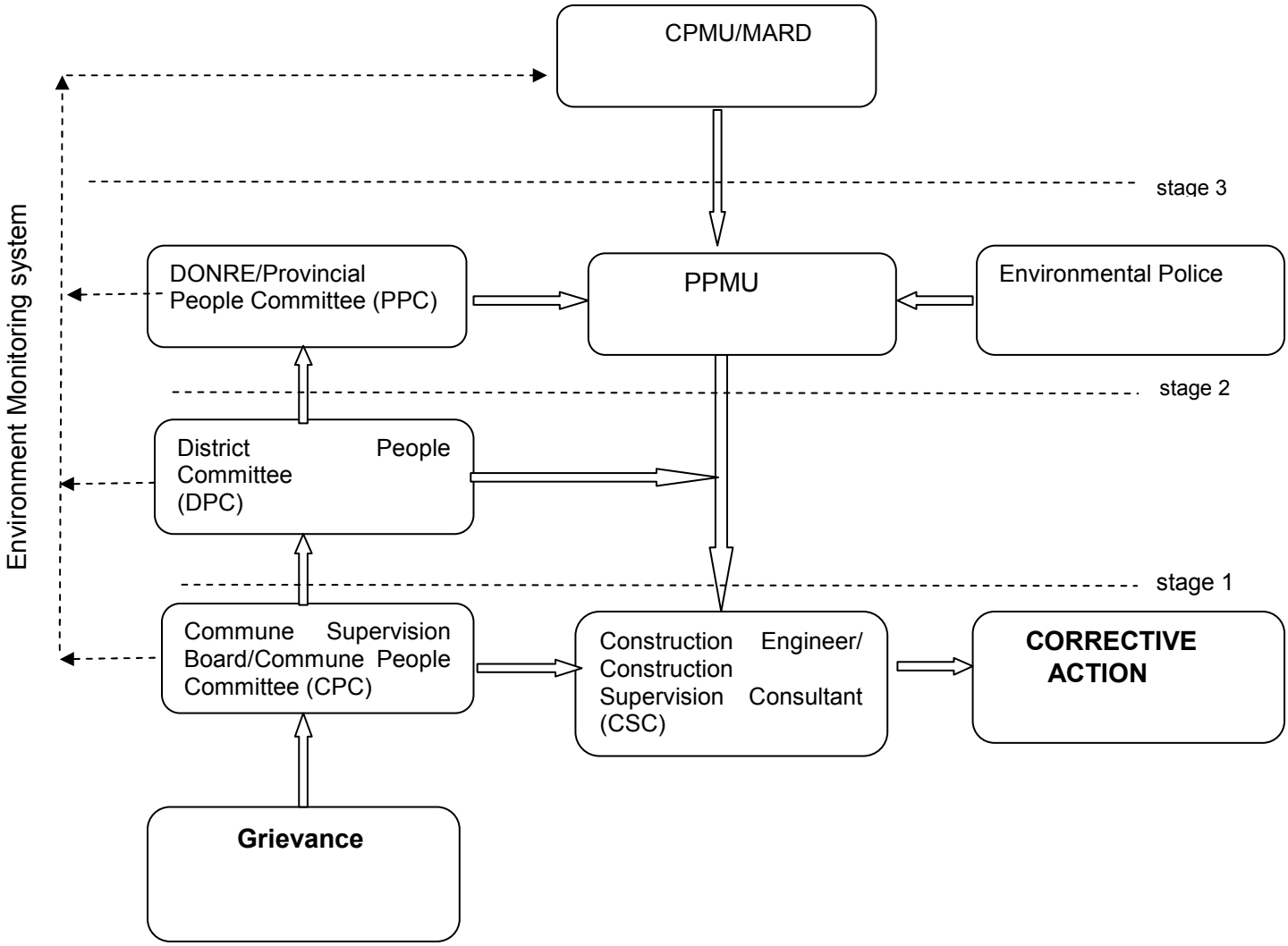
Target compartment	Parameters	Location	Methods	Frequency	Responsibility
	compared to QCVN 09 : 2008/BTNMT			dry season)	
Soil quality	Evidence of salinity or acidification	At representative locations in irrigated area	Observation	2 times per year for first 2 years (1 time in wet season, 1 time in dry season)	DARD and/or Operating Company

B. ENVIRONMENTAL COMPLIANCE MONITORING

Mitigation Measure	Parameters/ indicator	Location	Methods	Frequency	Responsibility
		Pre-Construction Stage			
UXO clearance	Certification of clearance	Affected areas	Observation	Prior to commencement of site works	Construction supervision consultant
		Construction Stage			
Erosion and sediment controls	Condition and capacity of controls	Throughout construction site	Observation	After large rain events	Construction supervision consultant
Materials storage	Condition of materials storage areas	Throughout construction site	Observation	Weekly	Construction supervision consultant
Construction equipment and vehicles	Noise and exhaust generation; covering of trucks; oil/fuel leaks	Throughout construction site	Observation	Random	Construction supervision consultant
Construction camp conditions	Cleanliness; waste disposal facilities; general condition	All construction camps	Observation	Weekly	Construction supervision consultant
Vegetation clearing	Boundaries of vegetation clearing	Areas of sensitive vegetation	Observation	Weekly during clearing works	Construction supervision consultant
Property access	Reinstatement of temporary and permanent accesses	Affected properties	Observation	Once during and once following construction	Construction supervision consultant
Waste disposal	Site cleanliness and condition; temporary waste storage area	Throughout construction site	Observation	Weekly	Construction supervision consultant
Avoidance of heritage items	Boundaries of works in vicinity of heritage items	At affected items	Observation	Once during construction works	Construction supervision consultant
		Operation Stage			
Use of irrigation water for domestic use	Water usage/allocation	Households in vicinity of irrigation canals	Observation and consultation	6 monthly for first 5 years of operation	DARD and/or Operating Company
Condition of water storage	Condition of water storage facilities	Water storage areas	Observation	6 monthly for first 2 years of operation	DARD and/or Operating Company
Protection of public safety	Presence of signage and measures to avoid	In populated areas	Observation and consultation	6 monthly for first 2 years of operation	DARD and/or Operating Company

Mitigation Measure	Parameters/ indicator	Location	Methods	Frequency	Responsibility
	accidents				
Erosion or scouring of canals	Condition of canals; sediment loads in water	In unlined sections	Observation	6 monthly for first 2 years of operation	DARD and/or Operating Company
Prevention of slumping or erosion of canal banks	Bank condition	Representative locations in subproject	Observation	6 monthly for first 5 years of operation	DARD and/or Operating Company
Waste management	Site cleanliness and condition; temporary waste storage areas	Throughout subproject area	Observation	6 monthly for first 5 years of operation	DARD and/or Operating Company

Attachment 3: Grievance Redress Mechanism



Staffing Requirements & Budget for EARF Implementation

EARP Activity	Staffing Requirements per Subproject		Marginal Cost Estimate per Subproject[11]
	CPMU Safeguards Officer	PPMU Safeguards / Environment Officer	
Application of environmental criteria to subproject selection	Approximately 0.25 weeks	Approximately 0.5 weeks	Included in project personnel salaries
Environmental categorization	Approximately 0.25 weeks	Approximately 0.25 weeks	Included in project personnel salaries
Preparation of environmental assessment documents: - Preparation of IEE/CEP	Approximately 0.5 weeks for IEE / CEP for advice to PPMU and review of documentation	Approximately 2 weeks for IEE/CEP for TOR preparation, engagement of consultants, supervision of preparation, review and submission to CPMU	$5,000 per IEE/CEP for consultant fees, data collection, site visits etc.
Public consultation and disclosure	n/a	Approximately 1 week	Included in budget for IRDSPCP Community Awareness and Participation Program
Review of environmental assessment documents by GOV and issuance of no-objection by ADB	Approximately 0.5 weeks for liaison with ADB/GOV as required	Approximately 1 week for liaison with ADB/GOV as required	Included in project personnel salaries
Monitoring and reporting of EARP implementation	Approximately 0.25 week	Approximately 1 week	Included in project

[11] Marginal cost estimates include those costs above and beyond salary costs for key project financed staff involved in EARF implementation