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**THE GOVERNMENT OF PAPUA NEW GUINEA**  
**ENVIRONMENT IMPACT STATEMENT (VOL 2)**

**PRODUCTIVE PARTNERSHIPS IN AGRICULTURE PROJECT (PPAP)**

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**ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK**  
**Final**  
**(ESMF)**

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*Part I*

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## Executive Summary

The purpose of the Environment and Social Management Framework (ESMF) is to provide the basis for the environmental management of the Productive Partnerships in Agriculture Project (PPAP) to ensure that project activities are implemented in such a manner that there are no deleterious environmental or social effects or if they cannot be avoided that they are managed and mitigated.

This document, the Environment and Social Management Framework part is Volume 2 of the Environment Impact Statement for the PPAP and it can also be used as a standalone document. Volume 1 is the Environment Assessment (EA); Volume 3 is the Integrated Pest Management Plan (IPMP) and Volume 4 is the Compensation Policy Framework (CPF). Together these four documents constitute the Environment Impact Statement, as required by the PNG Environment Act 2000.

PPAP will be implemented in the highly modified environments of the Highlands Provinces, East New Britain Province and the Autonomous Region of Bougainville, focusing on the existing cocoa and coffee growing areas, including:

- Strengthening key sector agencies to support effective project implementation,
- Developing demand-driven public-private partnerships to improve the delivery of services to and improve the livelihoods of smallholder cocoa and coffee growers, and
- Address critical market access infrastructure constraints facing the industry.

PPAP activities will be implemented in densely populated and highly modified environments (existing cocoa and coffee production areas) well away from sensitive environment and protected areas that are generally located in remoter localities with lesser population densities. Because the exact location of investments in each Province is not known at this stage, however, the environmental screening process described in this ESMF will ensure that the project does not impact on sensitive environments and protected areas.

PPAP follows a demand-driven approach and therefore the specific locations of PPAP activities are not known at the time of project preparation. The Environmental and Social Management Framework (ESMF) establishes the guidelines and procedures to be followed to ensure that the project is implemented in an environmentally and socially sustainable manner.

**Section 1** of the ESMF is the Introduction.

**Section 2** of the ESMF gives a summary description of the project's components, these being:

- Component 1: Institutional strengthening and industry coordination**
- Component 2: Productive partnerships**
- Component 3: Market access infrastructure**

**Section 3** discusses the World Bank Environmental and Social Safeguard policies triggered by the project and how these will be managed under PPAP, and these requirements are summarised in Table 6 of the ESMF.

**Section 4** summarizes the Legislative Framework under which PPAP will be administered under the PNG Environment Act 2000. This section discusses the requirements of relevant legislation and policies and how these have been incorporated into the project design and Environmental and Social Management Framework (ESMF) for the project.

**Section 5** provides environmental and social guidance on preparation and screening of subproject proposals for consideration under PPAP. This section provides an environmental and social risk matrix (Table 7) which can be used to guide proponents of subprojects to ensure social inclusion and ameliorate/mitigate environmental and social deleterious effects of potential activities. Section 6 also provides simple environmental and social screening guidelines for use by both subproject proponents and PPAP implementers (Table 8).

**Section 6** describes the potential interventions that may eventuate under PPAP (Table 9), bearing in mind that the project is demand-driven and that subprojects will only be identified during project implementation. This section provides comprehensive details of mitigation and monitoring measures that will need to be included in subproject proposals (Tables 10-12). This section also contains the management and monitoring institutional requirements for the implementation of the ESMF.

**Section 7** summarizes the staffing, TA and training requirements for the implementation of this ESMF.

Appendices provide guidelines for individual Environment Management Plans (1); an environmental and social assessment form for sub projects (2); Guidelines for further public consultation during project implementation (3); and a draft Terms of Reference for the Environmental Specialist.

## 1.0 Introduction

Following the Government of Papua New Guinea's (GoPNG) request for World Bank support to the agriculture sector, the GoPNG and the World Bank agreed in April 2008 on the concept and the outline of the proposed PNG Productive Partnerships in Agriculture Project (PPAP). Project preparation was carried out in 2009 and the ESMF is one of the instruments prepared to support the implementation of the PPAP.

The proposed PPAP will be one of Government's programs contributing towards the goals of PNG's National Agriculture Development Plan (NADP) and complementing other government initiatives. The focus of the PPAP is on the coffee and the cocoa industries, given their strategic importance for the rural economy and in view of the challenges that those industries are facing. Within those two major industries, the proposed PPAP would provide, over several years, the predictable and continued support required to implement some of the structural changes necessary to improve their performance and sustainability – and maintain their competitiveness in global markets- by strengthening core institutions and improving the delivery of support services and infrastructure for smallholders.

The development objective of the proposed project would be to improve the livelihoods of smallholder cocoa and coffee producers through the improvement of the performance and the sustainability of value chains in cocoa- and coffee-producing areas. This would be achieved through strengthening industry coordination and institutions, expanding and strengthening linkages between smallholder farmers and agribusiness for the provision of market access, technologies and services, and through the provision of critical market access infrastructure.

Key outcomes would be that: (i) smallholder farmers adopt efficient, market responsive and sustainable production practices leading to an increase in their income; (ii) demand-driven productive partnerships are established and sustained; and (iii) key infrastructure bottlenecks in the targeted value chains are addressed.

The proposed project would include the following components:

**Component 1: Institutional strengthening and industry coordination**

**Component 2: Productive partnerships**

**Component 3: Market access infrastructure**

### *Environmental and social safeguards instruments*

Component 2 and 3 of the PPAP follow a demand-driven approach and therefore the specific locations of PPAP activities are not known at the time of project preparation. The **Environmental and Social Management Framework (ESMF)** establishes the guidelines and procedures to be followed to determine and assess future potential environmental and social impacts of activities to be financed under PPAP, and then to set out mitigation, monitoring and institutional measures to be taken during implementation and operation of the project to eliminate, offset, or reduce any potentially adverse environmental and social impacts to acceptable levels.

Furthermore, in compliance with the World Bank's OP 4.12 on Involuntary Resettlement, GoPNG has prepared a **Compensation Policy Framework (CPF)**. The CPF constitutes Part

2 of this ESMF. The GoPNG is further required to disclose the final version of the ESMF in country so that it is accessible by the general public, local communities, potential project-affected groups, local NGOs and all other stakeholders. The final document will also be disclosed at the Infoshop of the World Bank.

Finally, as per World Bank policy OP4.09, Government is also required to prepare an **Integrated Pest Management Plan (IPMP)**. The IPMP constitutes Part 3 of this ESMF.

## 2.0 Description of the Project

### Project development objective and key indicators

The development objective of the proposed project would be to improve the livelihoods of smallholder cocoa and coffee producers through the improvement of the performance and the sustainability of value chains in cocoa- and coffee-producing areas. This would be achieved through strengthening industry coordination and institutions, facilitating linkages between smallholder farmers and agribusiness for the provision of market access, technologies and services, and through the provision of critical market access infrastructure.

Key outcomes would be that: (i) smallholder farmers adopt efficient, market responsive and sustainable production practices leading to an improvement in their income; (ii) demand-driven productive partnerships are scaled-up and sustained; and (iii) key infrastructure bottlenecks in the targeted value chains are addressed.

The key indicators at the Project Development Objective (PDO) level would be:

- (a) The number of smallholder farmers adopting improved farming practices;
- (b) The number and coverage of productive partnerships successfully implemented and/or scaled up and likely to be sustained;
- (c) The share of the export price including quality premium received by smallholder farmers in the project area; and
- (d) The net incomes of smallholder cocoa and coffee growing households in the project areas.

Intermediate outcome indicators would include:

- (e) The establishment of effective, representative industry coordination committees, providing policy advice for the sector;
- (f) The establishment of operating and sustainable information management systems in CIC and the Cocoa Board;
- (g) The number of hectares replanted or rejuvenated with improved planting material;
- (h) The share of total coffees exported by PNG that are differentiated;
- (i) The increase in average smallholder coffee yields in project areas;
- (j) Losses due to CPB infestation substantially reduced in project areas;
- (k) The increase in average smallholder cocoa yields in project areas;
- (l) The average dried cocoa moisture content is reduced in ARB;
- (m) The increase in women's access to information on improved farming practices, processing and marketing leading to increased income; and
- (n) The number of kilometers of rural roads and other access ways rehabilitated and maintained as per the maintenance agreements established under the project.

### Project components

The project would include three components: (a) Institutional Strengthening and Industry Coordination; (b) Productive Partnerships; and (c) Market Access Infrastructure. The project would be implemented over a six year period.

**Component 1: Institutional Strengthening and Industry Coordination.** The specific objective of this component would be to improve the performance of sector institutions and to enhance industry coordination in the coffee and cocoa sectors. Existing stakeholder platforms for industry coordination would be consolidated to address short- and long-term issues such as sector governance, skills development in the industry, improvement in extension services, industry strategy on threats to quality and quality promotion, information within the industry, market development and crop diversification. This component would have four sub-components as follows:

*Sub-component A: Industry coordination & policy development:* This sub-component would build the capacity of industry coordination committees (ICC) to support sector dialogue and policy development in the cocoa and coffee subsectors.

*Sub-component B: Communication and information management systems.* The project would strengthen the information management systems necessary to inform policy development and stakeholders' decisions in the coffee and cocoa industries.

*Sub-component C: Quality and sustainability management:* This sub-component would strengthen quality promotion in the coffee and the cocoa industries and promote, where appropriate, the adoption of certified sustainability practices (such as Organic, Fair Trade, Rainforest Alliance, Utz, and quality certification schemes);

*Sub-component D: Project management and monitoring and evaluation (M&E).* This sub-component would support all project management and M&E functions in the Project Management Units (PMUs) respectively located in the Cocoa Board and the CIC, as well as a small Project Coordinating Unit (PCU) in DAL. It would also finance the related Technical Assistance (TA) and the operations of the Technical Appraisal Committee (TAC) under Component 2.

**Component 2: Productive Partnerships.** The specific objective of this component would be to increase the integration of smallholder producers in performing and remunerative value chains, by developing and implementing productive alliances between smallholders and the private sector in the project areas.

Those partnerships would be demand-driven and consistent with the specific priorities identified in each subsector. During project preparation, these strategic priorities have been identified as follows:

- (a) In the cocoa sector, activities which support CPB management such as training on good farming practices; the production of improved planting material (nurseries and budwood gardens) to increase their availability for replanting; the promotion of and support for rotational replanting and cocoa garden rejuvenation; market-driven diversification of cocoa-farming system; and management of quality through the adoption of more efficient and environmentally-friendly post-harvest and processing technology;

- (b) In the coffee sector, activities which support the adoption of sustainability practices and the expansion of the production of differentiated coffees; training on good farming practices; the production of improved planting material to increase their availability for replanting; replanting and coffee garden rejuvenation programs; market-driven diversification of coffee-farming systems; and management of quality through the adoption of more efficient and environmentally-friendly post-harvest and processing technology.

Project funding would be channeled through partnerships with legal entities in the private and associative sectors, which have already been successfully working with smallholders on productivity, quality and sustainability enhancement and are interested in scaling up those activities. Those partnerships would be result-oriented, and expected results and cost-sharing arrangements would be specified in the partnership agreements. The project would provide assistance for the development of those partnership proposals, as needed, through contracted local service providers.

This component would have two subcomponents:

*Sub-component A: Productive partnerships in the cocoa growing areas.* This component would finance result-oriented partnerships in cocoa-growing areas to increase smallholder cocoa productivity, quality and sustainability and improve cocoa-farming systems. Its implementation would be under the responsibility of the PMU within the Cocoa Board with support from a Technical Appraisal Committee (TAC).

*Sub-component B: Productive partnerships in coffee growing areas.* This sub-component would finance result-oriented partnerships in coffee-growing areas to increase smallholder coffee productivity, quality and sustainability and improve coffee-farming systems. Its implementation would be under the responsibility of the PMU within the CIC with support from the TAC.

**Component 3: Market Access Infrastructure.** The specific objective of this component would be to improve smallholder market access in targeted areas under the project. This component would have two sub-components as follows:

*Sub-component A: Preparation of market access infrastructure investments.* This sub-component would finance the identification and selection of priority investments in support of Component 2 partnerships.

*Sub-component B: Market access infrastructure development.* This sub-component would finance the related investments in infrastructure rehabilitation and maintenance.

### **Geographical coverage**

The project would initially be implemented in East New Britain Province, the Autonomous Region of Bougainville, Eastern Highlands Province, Western Highlands Province, Jiwaka Province and Simbu Province. Most producers and the major stakeholders in the public and the private sectors are all located in those Provinces. Rural household dependency on coffee and cocoa income for their livelihoods is also high in those Provinces. A first review of

possible expansion to new Provinces would be conducted during Project Year 2 (PY2), and a second during PY4. Component 1 activities would, by nature, provide benefits at the national level.

### **Targeting**

Targeting of disadvantaged groups would be considered in the selection and prioritization of investments under the project. Additional support will be provided under Component 2 to ensure that groups with lower capacity are able to engage in project activities. Specific consideration will be given to partnerships with smallholder farmers in less favored areas (such as more remote areas in the Highlands, or areas hit by CPB and exclusively dependent on cocoa) and partnerships which mobilize vulnerable groups (such as women and young farmers). Gender balance will be considered in all activities, for example the provision of training to both men and women, or employment opportunities at the ward level through the establishment and management of nurseries and budwood gardens. The M&E system would monitor targeting of those groups under the project.

### **3.0 Description of World Bank Environmental and Social Safeguards Policies and Triggers**

This ESMF has been designed so that all investments in the PPAP comply with all the Environmental Laws of the Independent State of Papua New Guinea and the Environmental and Social Safeguard Policies of the World Bank. In this chapter, the Bank's safeguards policies and their applicability are discussed and in the subsequent chapter those of the PNG are presented.

The World Bank Safeguard Policies that are triggered are:

1. Environmental Assessment (OP4.01)
2. Pest Management (OP 4.09)
3. Indigenous Peoples (OP 4.10)
4. Involuntary Resettlement (OP 4.12)

These policies apply to all activities funded under the PPAP irrespective of whether or not they are being funded in whole or in part by the World Bank, IFAD, Government of Papua New Guinea or any other donor.

The World Bank's official web site [www.worldbank.org](http://www.worldbank.org) lists a complete description of the Bank safeguards and their triggers for applicability.

#### **3.1 Environmental Assessment (OP4.01)**

This policy requires environmental assessment (EA) of projects/programs proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus improve decision making. The EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the program. The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and transboundary and global environmental aspects.

The ESMF establishes a mechanism to determine and assess future potential environmental and social impacts during implementation of the subproject activities and investments under the proposed PPAP, and sets out mitigation, monitoring and institutional measures to be taken during the identification and implementation of those activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

OP 4.01 further requires that the ESMF must be disclosed as a separate and stand alone document by the Government of Papua New Guinea and the World Bank. The disclosure should be both in Papua New Guinea where it can be accessed by the general public and at the Infoshop of the World Bank. The draft ESMF was disclosed in country and in the Infoshop of the World Bank on December 8, 2009. The final ESMF was completed on February 15, 2010 and integrates the comments received after public disclosure of the draft.

The Environmental Assessment policy further calls for the PPAP as a whole to be environmentally screened to determine the extent and type of the EA process. The PPAP has

thus been screened and assigned an EA Category B. This category of projects/programs is defined as follows:

“Category B projects are likely to have potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - and are less adverse than those of category A projects. These impacts are site specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. The EA process for category B projects examines the potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.”

Therefore, this ESMF sets out to establish the process to be undertaken for screening of PPAP activities when they are being identified and implemented. This process requires the implementers/operators/sponsors of the activities in the PPAPs, such as the province, district, the private sector, NGOs, village officials and/or farmer groups and associations to use processes contained in the ESMF, especially Section 5.0, to identify potential adverse impacts of their activities under the project and determine the corresponding mitigation measures they would need to incorporate into their planned activities.

### **3.2 Pest Management (OP 4.09)**

The Bank uses various means to assess pest management in the country and support integrated pest management (IPM) and the safe use of agricultural pesticides: economic and sector work, sectoral or project-specific environmental assessments, participatory IPM assessments, and adjustment or investment projects and components aimed specifically at supporting the adoption and use of IPM.

In Bank-financed agriculture operations, pest populations are normally controlled through IPM approaches, such as biological control, cultural practices, and the development and use of crop varieties that are resistant or tolerant to the pest. An IPMP is a comprehensive plan, developed when there are significant pest management issues such as (a) new land-use development or changed cultivation practices in an area, (b) significant expansion into new areas, (c) diversification into new crops in agriculture (d) intensification of existing low-technology systems, (e) proposed procurement of relatively hazardous pest control products or methods, or (f) specific environmental or health concerns (e.g. proximity of protected areas or important aquatic resources; worker safety).

An IPMP is also developed when proposed financing of pest control products represents a large component of the project. A pest management plan reflects the policies set out in OP 4.09, Pest Management. The plan is designed to minimize potential adverse impacts on human health and the environment and to advance ecologically based IPM.

As the targeted/significant stakeholders in this program are small block holders, together with the cocoa and coffee industry, who during the implementation cycle of the PPAP, will, independently continue to require the use of inputs, the provisions of OP4.09 are being triggered so that best practice methodologies in this field become part of farmer training activities under the PPAP.

Papua New Guinea does not have a fully developed policy on IPM although the oil palm industry has its IPM. This will be the second initiative to have an IPMP developed in PNG. The GoPNG has prepared an Integrated Pest Management Plan (IPMP), which is included as part of the ESMF and can also be used as a standalone document, to address the needs of OP4.09.

The IPMP has the following objectives:

- To enhance capacity of the program beneficiaries (individual farmers) to be aware of benefits and possible negative impacts of pesticides and to use pesticides in an economic, efficient and safe way for farmers, their families and environment (ensuring that banned pesticides or agro-chemicals under the Stockholm and Rotterdam Conventions will not be acquired by farmers),
- Introduce them to Integrated Pest Management (IPM) approach or concept as the way to control pests and reduce losses and also as the way to increase their production through good farming practices; and
- Identify the current available IPM practices and improve them in the project, with a view to promote movement towards the development and implementation of a pest management policy.

The first part of the IPMP is the presentation of the current policy regulations together with context of the project. It then identifies the main pest problem pertinent to the cocoa and coffee industry. It then outlines the current IPM practices and includes best practices into the PPAP. At this stage, the Cocoa Pod Borer (CPB) is the only active pest that can cause destructive damages to the cocoa industry and the IPMP therefore places a specific emphasis on PB management.

In the case of coffee, the Coffee Cherry Borer (CBB) has not yet arrived into Papua New Guinea, hence the approach is to do surveillance and raise awareness of the coffee farmers and ensure that all stakeholders are prepared for possible incursion. A contingency plan has been prepared by GoPNG with support from ACIAR. The use of agrochemicals is not properly regulated in PNG and that is also covered in the IPMP.

### **3.3 Indigenous Peoples (OP/BP 4.10)**

This policy has two objectives: A) To ensure that indigenous people benefit from development projects, and B) to avoid or mitigate potential adverse effects on indigenous people caused by Bank –financed activities. Special action is required where Bank investments affect indigenous peoples, tribes, ethnic minorities, or other groups whose social and economic situation restricts their capacity to assert their interests and rights in land and other productive resources.

The PPAP triggers OP/BP 4.10 on Indigenous Peoples. However, as all beneficiaries of the project and all people affected by the project are indigenous, no separate Indigenous Peoples Policy (IPP) will be required. However, elements of an IPP have been integrated in the project design. A Beneficiaries Participation Framework has also been prepared as part of the

Social Assessment, given the need for broad community support for activities to be implemented under the PPAP. It is included as Appendix 5 of this ESMF.

Social surveys carried out under the Social Assessment work together with the community consultations carried out as part of the EA highlight the community's support for both the cocoa and coffee interventions. The project will however ensure the specific characteristics and vulnerabilities of groups targeted by the sub projects will be considered.

### 3.4 Involuntary Resettlement (OP/BP 4.12)

The project will not finance any activity that requires involuntary resettlement or involuntary land acquisition.

Under Component 2 (Productive Partnerships), any activity requiring land use, such as rehabilitation and expansion of existing nurseries, the establishment of satellite nurseries and budwood gardens, and the improvement of processing and storage facilities will be voluntary in nature and will take place within existing facilities. The Project Implementation Manual details the process for due diligence that will be required as a prerequisite for approval of these sub-projects.

Under Component 3 (Market Access Infrastructure) subprojects may possibly result in temporary land use, or damage of crops and economic trees.

A Compensation Policy Framework (CPF) has been prepared which details the key principles for land use and compensation for damaged assets should such situation arise. These principles include:

- i) Consultations with and support from communities as a first step in subproject preparation;
- ii) Minimize land acquisition and damage to assets through appropriate design of infrastructure rehabilitation works; no financing for subprojects that require voluntary or involuntary resettlement or damage to physical assets;
- iii) The provision of minor land acquisition through voluntary donations only.

**Table 1: Summary of the Requirement of Bank Safeguard Policies triggered by the PPAP**

Bank Safeguards Policy Triggered	Action Required by Triggered Policy	By Whom	Date action required by
OP4.01 Environmental Assessment (including Pest Management OP 4.09)	1) Preparation of ESMF and IPMP (this document)	1) ESMF, including IPMP, by GoPNG	1) ESMF to be approved by the DAL of the GoPNG and the World Bank and disclosed in PNG and in Bank Infoshop.
	2) Under Component 2, Preparation of subproject EMPs (see section 5.0)	2) Sub project EMPs by subproject applicants; Screening and monitoring by PMUs	2) Subproject EMP's to be approved by the PMUs before funding released for activities.
	3) Under Component 3,	3) Transport Planner with	

	preparation of an EMP for specific infrastructure rehabilitation	support from Environmental Specialist	3) Investments to be approved by the PMU and the Provincial Technical Departments
OP/BP 4.10 Indigenous People	Elements of IPP to be included into Project Design.	GoPNG	Elements of IPP effectively implemented under PPAP
OP 4.12 Involuntary Resettlement	Preparation of CPF	GoPNG	CPF to be approved by DAL and by the Bank and disclosed in PNG and Bank Infoshop.

## **4.0 Administrative, Policy, Legislative and Regulatory Framework**

### **4.1 Administrative Structure and PPAP institutional arrangements**

The Independent State of Papua New Guinea is made up of mainland Papua New Guinea and the island of New Britain, New Ireland, Bougainville and the 600 smaller islands stretched out in the Bismarck, Solomon and Coral Sea. Administratively, PNG is divided into 20 provinces with the 81 Districts, corresponding Local Level Governments and Wards and villages. The village is the smallest administrative area and the one closest to the communities.

The role of Government for the agricultural sector is to facilitate development, provide stimulus for private investment initiatives, and promote effective regulation, monitoring and co-ordination of the sector. The agricultural sector lead Ministry, and department, namely the Department of Agriculture and Livestock (DAL) will coordinate the implementation of the PPAP at national level and Project Management Units (PMU) located respectively in the PNG Cocoa Board and in the PNG Coffee Industry Corporation Ltd (CIC) will be responsible for project implementation in the project provinces.

Overall policy guidance and coordination of the PPAP will be provided through the national Project Steering Committee (PSC). The PSC, chaired by the Secretary of DAL, is responsible for overseeing the implementation of the PPAP and monitoring its performance to ensure that the goals of the project are being achieved. The PSC, which meets at least six-monthly, comprises representatives from the Department of Finance (DOF), the Department of Treasury (DOT), the Department of Works (DOW), the Department of Environment and Conservation (DEC), the Department of Commerce and Industry, the Cocoa Board (CB), the Coffee Industry Corporation Ltd (CIC), the Rural Industries Council (RIC), the National Agriculture Research Institute (NARI) and the Provincial Governments of the project provinces.

### **4.2 Management and Administration Framework for Agriculture and Rural Development**

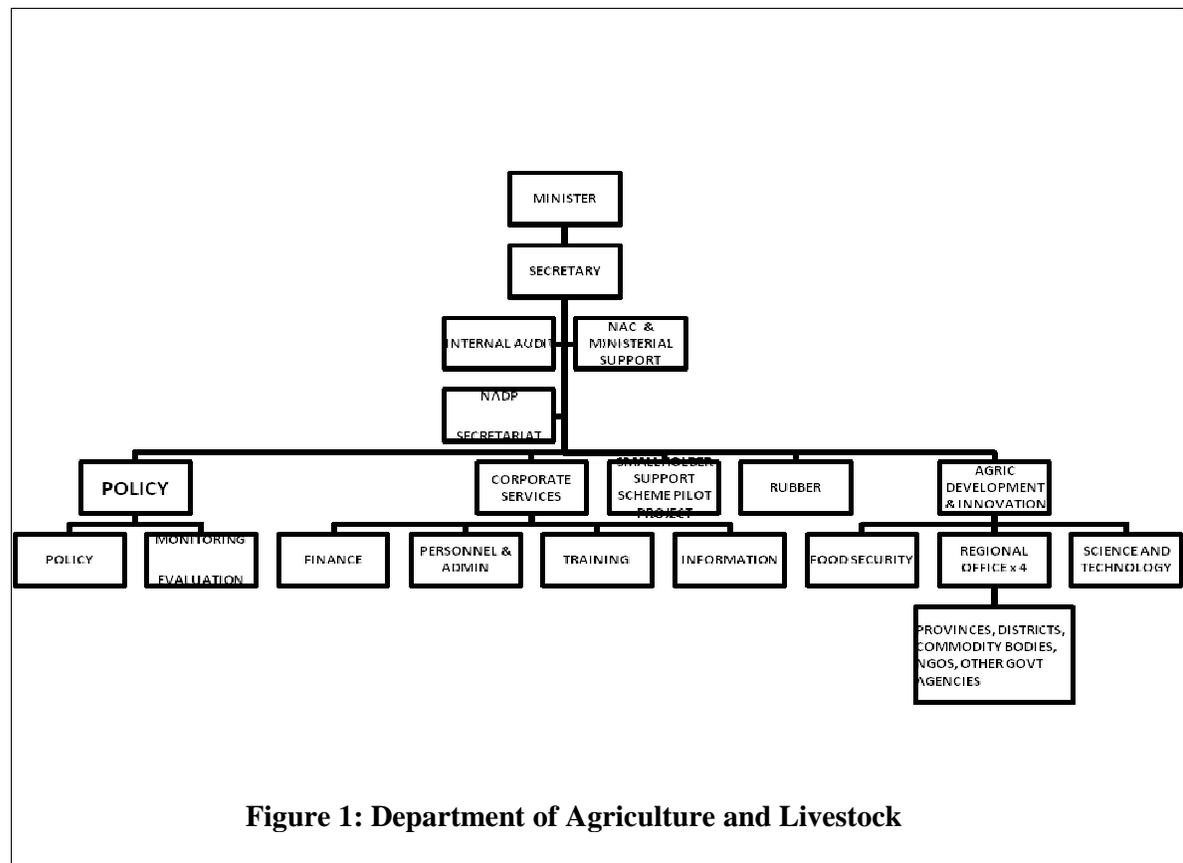
With regards to the management and administration of agriculture projects and activities throughout Papua New Guinea, the overall responsibility lies with the Department of Agriculture and Livestock, and for the management of the bio physical environment, the responsibility rests with the Department of Environment and Conservation although there are other sector departments and agencies that have specific obligations to natural resources such as;

- Department of Mining and Geohazards.
- Mineral Resources Authority.
- Department of Petroleum and Energy.
- Department of Lands and Physical Planning.
- National Forestry Authority.

- National Fisheries Authority.
- Department of Works.
- Department of Commerce and Industry.

For specific commodities, management and administration has also been delegated to the respective commodity boards, such as the Cocoa Board and the CIC. Finally, under the Organic Law, the delivery of extension services has been devolved to the provincial and district level.

Agriculture in PNG is coordinated by the Department of Agriculture and Livestock, where the Department of Agriculture and Livestock has an overarching responsibility over a number of agencies and research institutions such as the National Agriculture Research Institute (NARI), National Agriculture Quarantine Inspection Agency (NAQIA), the Coffee Industry Corporation (CIC), the Cocoa Coconut Institute Limited (CCIL) and the Cocoa Board (CB). Figure 1 shows the current structure of DAL.



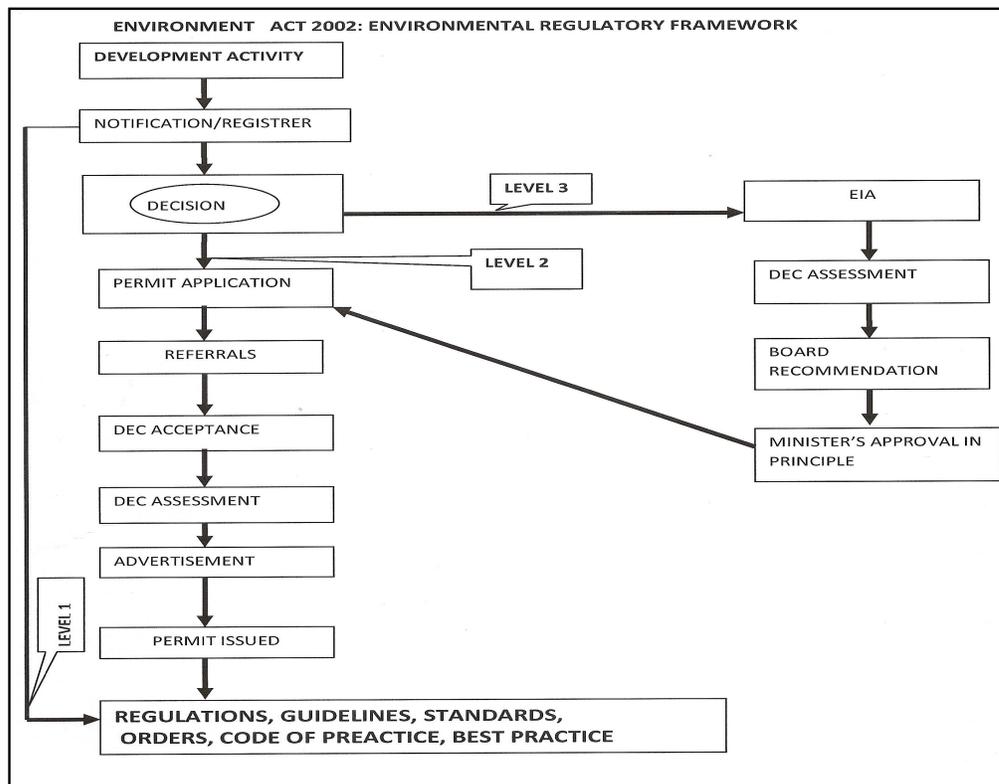
Within the PPAP, the commodity boards responsible for project management are the CIC and Cocoa Board.

The National Agriculture Development Plan (NADP), approved in 2007 and covering the 10 year period to 2016, is the framework document guiding Government's support to the agriculture sector. At sector level, strategic plans have also been developed more recently, such as the Coffee Strategic Plan 2008-2018 of the CIC, and the cocoa strategic plan being prepared by the Cocoa Board.

Environment protection and conservation, as well as sustainable natural resource management, are key principles under the NADP.

### 4.3 The EIA Process in Papua New Guinea

The EIA process in Papua New Guinea is shown by Figure 2 and it sets out the process in relation to the Environmental Act 2000 and the Environmental Regulatory Framework (ERF) as outlined by DEC 1996.



**Figure 2: EIA Process in PNG**

Provided with the ERF document are prescribed activities within different Levels to determine whether an activity will require either a full EIA or be subjected to regulations, guidelines, standards, orders, code of practice and best practice. Level 1 is deemed to have insignificant impact and would be subject to regulations. While Level 2 and 3 has significant impact and will be subjected to the EIA process.

The EIA procedure involves the following:

- \* **Registering a development activity:** The proponent is required to register the activity or project with the DEC.

\* **Screening and Decision Making:** The project is classified to determine the level at which the environmental assessment should be carried out. If the project does not have any significant impact on the environment then the activity will be approved and subject to the guidelines, regulations, standards or code of best practice. If the project falls into Level 2 or Level 3 then the EIA process will continue.

\* **Conducting an EIA:** This involves the three main stages of the EIA process (scoping, preparing terms of reference and preparing a Notification of Preparatory Work). By submitting a notification of the preparatory work, projects can be further screened and then decisions made. Level 2 activities will be assessed and then approval through an appropriate Permit. For Level 3, a full EIA will need to be conducted.

A number of documents are submitted to DEC for the Level 3 project with firstly an Environmental Inception Report. This is assessed and feedbacks made to the proponent to adjust or expand on the EIA process. This is then followed through with the full project EIA. Guidelines for the Environmental Inception Report and the Environmental Impact Statement (EIS) is provided by DEC.

\* **Reviewing the EIA:** An Environment Council established by the DEC reviews the EIA and decides whether the EIA is acceptable or not.

\* **Issuing the relevant permits:** If the EIS is approved, the DEC issues the necessary environmental permit that confirms the EIS has been satisfactorily completed and the project may proceed.

\* **Decision-making:** A decision is made as to whether a proposal is approved or not; a record of decision explains how environmental issues were taken into consideration.

\* **Monitoring project implementation:** The operator prepares and executes an appropriate monitoring program (i.e. an environmental management program).

**Monitoring the project:** DEC undertakes periodic and independent compliance monitoring of the project. It will provide a report which will be given back to the developer for discussions and amendment to its operation, should there be an environmental concern.

\* **Decommissioning the project upon its completion:** A decommissioning report is prepared at the end of the project life. This report outlines the restoration/rehabilitation activities to be carried out by the operator and is lodged with the DEC. At the moment in PNG, only mines have followed the process of decommissioning completed projects. In the other sectors, reporting has not been consistent.

**Extent of public participation.** Public consultation and participation is required during the scoping stages and while fulfilling the terms of reference for the impact assessment of the EIA process. The operator is responsible for identifying interested and affected parties and ensuring that all parties concerned are given adequate opportunity to participate in the process. A public information program is initiated, and public notices are issued during the scoping and EIA stages.

Whenever a strong public concern over the proposed project is indicated and impacts are extensive and far-reaching, DEC is required to organize a public hearing. The results of the public hearing should be taken into account when a decision is taken whether or not a permit is to be issued.

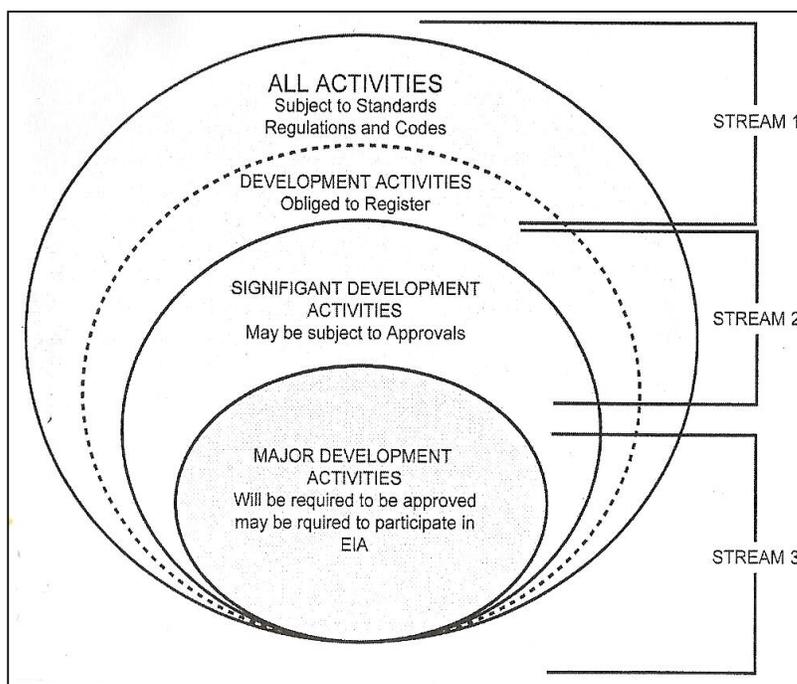
#### 4.4 Legislative Framework for the Management of the Environment

The Papua New Guinea Department of Environment and Conservation (DEC) is the national agency tasked with environmental management within Papua New Guinea. It has undergone a regulatory reform process in line with other public sector reforms and institutional structure for environmental management has changed. DEC had key strategic directions opting to move away from a central management to a national, provincial and community oriented management system (DEC, 1996).

In 2002, the Environmental Act 2000 was enacted where environmental assessment requirements for activities and projects in Papua New Guinea incorporated the previous three Acts; Environmental Planning Act (1978), Environmental Contaminants Act 1982 And Water Resources Act 1982. The Environmental Contaminants Act contains procedures and permitting of pesticides and these are now incorporated into the Environmental Act 2000.

As earlier stated, activities are screened into three streams (Figure 2) where Level 1 or Stream 1 activities could be subjected to standards, regulations and codes. The new Environment Act provides for a regulatory framework for environment management which also covers management of chemicals and hazardous substances. The Act specifies three levels of Activities which is a categorisation of the degree and magnitude of environmental impacts. Levels of impacts are categorized into three groups and illustrated in Figure 3.

**Figure 3: Regulatory Streams under the Environmental Act 2000 (DEC 1996)**



**Level 1 activities:**

are those that require a minimum level of environmental protection. Regulation of such activities will be based on standards, codes and regulations that set benchmarks for environmentally acceptable activities. For example, maximum discharge levels, ambient quality standards for receiving environment, codes of practice, guidelines for best/acceptable practice.

In cases of non-compliance, environmental protection orders, clean-up orders and emergency directions may be issued.

**Level 2 activities:**

are those that require a framework of environmental approvals allowing for water discharge permits, or licensing for importation, sale and use of environmental contaminants (hazardous chemicals) and for site-specific environmental conditions to be set for these activities which have more significant potential impacts. Level two activities will be regulated by means of conditions in environmental permits, environmental improvement plans and environmental management programs.

**Level 3 activities:**

cover those with the potential of major environmental impact and are projects of national significance or of large scale. Such activities will be subject to a process of public and detailed considerations of environmental implication through the Environmental Impact Assessment process.

Activities of the Productive Partnerships in Agriculture Project (**PPAP**) all fall under Level 1 and Level 2 and is consistent with the World Bank Category 'B' project.

Level 2 activities are stated in the following sub categories 2, 8, 9 & 12 of the Environmental Act 2000 respectively.

- 2.3 Gravel extraction operating continuously for more than 6 months and involves the extraction of no greater than 10,000 tonnes per annum.
- 2.4 Quarrying involving the extraction of no greater than 100,000 tonnes per annum.
- 8.5 Agricultural cultivation of an area greater than 1,000 hectares.  
Sub category 9: Food processing and plant product processing.
- 9.4 Processing of coffee or cocoa in plants producing more than 5,000 tonnes per year
- 12.2 Construction of marinas and boating facilities designed or used to provide mooring for more than 50 powered vessels at any one time

#### 4.5 International Conventions

Papua New Guinea is a party to many international agreements including on Biodiversity, Climate Change, Desertification, Endangered Species, Ozone layer protection, and Marine Life Conservation. Within the context of the PPAP, only the following are applicable as discussed in the Environmental Assessment (EA).

- i. International Plant Protection Convention;
- ii. Convention on Biological Diversity;
- iii. Rotterdam Convention as the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International/ Trade; and
- iv. Stockholm Convention on Persistent Organic Pollutants.

## 5.0 Environmental and Social Guidance on Preparation and Screening of Subproject Proposals

### 5.1 Introduction

This section of the ESMF can be used both for guidance of applicants under Component 2 of the PPAP in the preparation of their subproject proposals and for the evaluation of the proposals by the PCU and the PMUs to ensure that subprojects and activities implemented under Component 2 have no deleterious environmental or social impacts. It will also be used by the PMU for the selection and implementation of specific investments under Component 3.

The Environmental and Social Risk Matrix (Table 2) serves to identify potential environmental or social effects of sub projects so that these can be avoided or mitigated in the project design. Table 3 provides a screening process with regular “flagging” of situations that require amendment of subproject/activity design to minimize deleterious environmental and social effects of the activities contained in the final project proposal.

Both tables can be used in by the PMUs in subproject appraisal under Component 2 and for the screening of specific investments under Component 3.

### 5.2 Risk assessment

**Table 2: Environmental and Social Risk Matrix**

Proposed Development Activity:					Proponent:	
Natural Resource	Resource Value	Environmental Effect or Potential Risk			Avoidance or Mitigation Measures	Resources Allocated / Tasks to be carried out
		Low	Med	High		
Social Structures / Social Relationships	Social Values	Social Effects or Potential Social Risks			Avoidance or Mitigation Measures	Resources Allocated / Tasks to be carried out
		Low	Med	High		

### 5.3 Project exclusions

**Natural Habitats.** The proposed project is expected to focus on the improvement of smallholder production and small scale transport infrastructure in existing production areas. All subprojects or activities which could potentially have adverse impacts on critical natural habitats (as defined by World Banks OP4.04) are excluded from the PPAP. The Department of Environment and Conservation will be consulted by the PMUs and PCU at the start of project implementation, and as needed for updates, to ensure that the most current information on natural habitats, including conservation areas and other sensitive environments in the project areas, is provided to the PMUs/PCU.

**Forests.** The project will not finance any activity involving significant conversion or degradation of critical forest areas or related critical natural habitats. The Department of Forests will be consulted by the PMUs and PCU at the start of project implementation, and as needed for updates, to ensure that the most current information on forest inventories and forest status in the project areas is provided to the PMUs/PCU.

**Physical cultural resources.** Subprojects and activities under the PPAP are unlikely to affect sites with archeological, paleontological, historical, religious, or unique natural values, because they will be carried out in existing production areas. However, appropriate clauses will be included in construction contracts under Component 3 regarding the procedures to be followed in the event of “chance finds” of culturally significant artifacts or sites.

### 5.4 Guidelines for Environmental and Social Screening

The Screening Process set out below provides a simple mechanism for identifying whether a subproject proposal or an activity poses a risk to:

- the natural environment, its resource values (including its subsistence resources’ values) and / or conservation values; and
- the socio-economic environment, and the social structure, relationships and social values it sustains.

The Screening Process requires simple questions to be answered in relation to each subproject proposal. These questions cover the following areas:

- Does the location of the proposed project pose a risk to the environment?
- What will the project use or take from the environment and does this pose an environmental risk?
- What will the project release or allow to escape into the environment and does this pose an environmental risk?
- Is there broad community support for the sub project?
- Are there any social risks and how can they be mitigated?

These questions and the appropriate responses to the answers are provided in Table 3 below. The Timing and responsibilities for use of these guidelines are contained in Section 5.5.

**Table 3: Environmental and Social Screening Guidelines**

<b>STEP 1: INITIAL SCREENING FOR PROJECT LOCATION</b>		
<b>Question:</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
1. Will any part of the proposed project, or any of its associated activities be situated in a location where project materials, wastes (including litter), project equipment, project personnel or any domestic animals associated with the project enter or disturb a <u>sensitive environment</u> ?	Proceed to, “Initial Screening for Use of Environment” <b>(Step 2)</b>	If the answer is No, then refer to question 2
2. Does the location of the proposed project pose a risk to the environment or to the community? For example, does the proposed project pose a risk to: people’s livelihoods or community social stability? Particular attention should be given to the various groups in the community, e.g. men, women, youth, elderly, clan groups, etc.	Proceed to, “Initial Screening for Use of Environment” <b>(Step 2)</b>	If the answer is No, refer to question 3.
3. What will the project use or take from the environment and does this pose an environmental risk <sup>1</sup> ?	Proceed to, “Initial Screening for Use of Environment” <b>(Step 2)</b>	If the answer is No, refer to question 4.
4. What will the project release or allow to escape into the environment and does this pose an environmental risk?	Proceed to, “Initial Screening for Use of Environment” <b>(Step 2)</b>	Similarly, if the answer is negative, refer to step 5.
5. Will the project rely on community/village members contributing time and labour to the project? If so, consideration must be given to potential time and labour conflicts that may impact negatively on household subsistence and other economic activities.	Proceed to, “Initial Screening for Use of Environment” <b>(Step 2)</b>	This may require outline in detail.
6. Does the project require the taking of customary land or the resettlement of people for project purposes?	The project cannot be financed under PPAP	
7. Does the project require the acquisition of small tracts of land?	Go to #8 below	
8. Have community members/customary landowners offered their land for use?	Follow steps outlined in Compensation Policy Framework.	This project cannot be financed by the PPAP
9. Does the project require the	Follow steps outlined in	Refer to step 10

<sup>1</sup> For example timber used as contribution by communities may be sourced from local forests.

destruction of food crops or economic trees?	Compensation Policy Framework and prepare a Compensation Action Plan if there is agreement with asset owners.	
10. Does the project require the destruction of physical property such as housing or community buildings??	The project cannot be financed under PPAP	Refer to step 11
11. What social/clan groups will benefit from the project? Need to ensure that the project benefits are not captured by dominant or powerful community or social groups or increases conflicts between groups/clans.	Proceed to, "Initial Screening for Use of Environment" <b>(Step 2)</b>	Ensure total encompassment.

**Explanation:**

Sensitive environments include:

- Streams, rivers or other water sources (e.g. natural springs) that are used for water supply;
- Wetlands, lakes and ponds;
- Shorelines, coastal lagoons and mangroves;
- Coral reefs and sea-grass meadows;
- Undisturbed natural forest (forest that has not been cut for fuel or timber or had tracks cut through it, other than footpaths);
- Protected areas such as Conservation Areas, Wildlife Management Areas and National Parks;
- Sites or natural features of archaeological, historical, traditional or cultural value or importance;
- Areas of recognized conservation habitat value (including aquatic and marine habitats).

**STEP 2: INITIAL SCREENING FOR USE OF THE ENVIRONMENT**

<b>Question:2a</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
Will the project use, remove, damage or significantly disturb any materials, plants animals or other resources from the natural environment?	Proceed to <b>2b</b> , below	Proceed to Initial Screening for Releases to Environment <b>(Step 3)</b> .

**Explanation:** This includes:

- Taking of water from streams, rivers or other natural water-bodies;
  - Damming or diverting streams or rivers;
  - Removing or using natural vegetation (e.g. harvesting of natural fruits and / or seeds, scrub clearance, timber cutting);
- Removing and using river stone, gravels or sands for construction purposes

<b>Question (2b):</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
Could the methods and amount of materials / resources used, removed, damaged or disturbed adversely affect to a significant degree: <ul style="list-style-type: none"> <li>• Water flows downstream (particularly where there is downstream domestic users);</li> <li>• Water quality downstream (particularly where there is downstream domestic users);</li> <li>• Natural vegetation of the area in terms of protection of the soil, the</li> </ul>	Detailed Environmental Screening is required, or proposal should be modified and resubmitted.	Proceed to Initial Screening for Releases to Environment <b>(Step 3)</b>

<p>number of plant species, the range of habitats in the area;</p> <ul style="list-style-type: none"> <li>• Wildlife (including aquatic and marine species) in terms of the number of species and the size of the species populations in the area;</li> <li>• Stability (and flood protection capacity) of riverbanks and shorelines.</li> </ul>		
<b>STEP 3: INITIAL SCREENING FOR POTENTIAL RELEASES TO THE ENVIRONMENT</b>		
<b>Question (3a):</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
<p>Will the project generate any solid or liquid wastes (including storm-water and wash-water), litter or noticeable amounts of dust, smoke, gases, odours or noise that could be released or escape into the environment?</p>	<p>Proceed to <b>3b</b>, below.</p>	<p>Proceed to <b>Step 4</b>.</p>
<b>Question (3b):</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
<p>Does the project proposal describe simple, effective and sustainable measures to contain treat and safely dispose of these wastes, with no risk of damage to or contamination of:</p> <ul style="list-style-type: none"> <li>• watercourses and other water-bodies;</li> <li>• water-table and groundwater;</li> <li>• vegetation;</li> <li>• soils;</li> <li>• subsistence resources, including gardens and traditional hunting / harvesting areas;</li> <li>• and with no risk of damage or disturbance to: people, property and domestic animals;</li> <li>• sites or artefacts of historical, traditional or cultural value.</li> </ul>	<p>Proceed to Question <b>3c</b>, below.</p>	<p>Detailed Mitigation measures are required, refer to Tables 5 to 7 below or proposal should be modified and resubmitted.</p>
<b>Question (3c):</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
<p>Has the proponent and the community the technical skills and resources to be able to implement these measures in an effective and sustainable manner?</p>	<p>Proceed to Question <b>3d</b>, below.</p>	<p>Detailed Mitigation measures are required, refer to Tables 5 to 7 below or proposal should be modified and resubmitted.</p>
<b>Question (3d):</b>	<b>If answer is Yes:</b>	<b>If answer is No.</b>
<p>Have realistic costs for implementing these measures been included in the project budget and request for funds?</p>	<p>Proceed to <b>Step 4</b></p>	<p>Detailed Mitigation measures are required, refer to Tables 5 to 7 below or proposal should be modified and resubmitted.</p>
<b>STEP 4: ENVIRONMENTAL AND SOCIAL SCREENING APPROVAL</b>		

If the answers to **Steps 1, 2 and 3** have led to **Step 4**, it is highly unlikely that the project poses a risk to the environment or the subsistence resources of an area. Proceed with screening for community support and impact on land use (**Step 5**) before the proposed project can be granted its environmental and social approval, subject to any other exclusions listed in the Project Implementation Manuals. See also Appendices 1 and 2 for guidance

<b>STEP 5: SCREENING FOR COMMUNITY SUPPORT AND IMPACT ON LAND USE</b>			
<b>Question</b>	<b>Guidance</b>	<b>Yes</b>	<b>No</b>
<b>A. Broad Community Support</b>			
1. Has the community been consulted on the sub-project? Specifically have they: <ol style="list-style-type: none"> <li>Been provided with relevant material?</li> <li>Been given information on the nature and impacts of the sub-project (such as impacts on land use, crops)?</li> <li>Been given an opportunity to provide input to the subproject?</li> <li>Been given an opportunity to accept or reject the sub-project?</li> </ol>	Compensation Policy Framework Section 3.1, #1  Beneficiaries Participation Framework	Go to #2	Sub-project cannot proceed
2. Has community support for the sub-project been demonstrated?	Compensation Policy Framework Section 3.1, #4  Beneficiaries Participation Framework	Go to # 3	Sub-project cannot proceed
3. <i>Where community support has been obtained it will be recorded, signed, and filed on site and with the PMU.</i>			
<b>B. Temporary land use</b>			
1. Will the sub-project require use of land on a temporary basis?		Go to # 2	No action required
2. Has the land required for temporary use by the sub-project been voluntarily offered for use by community members/customary landowners (i.e. no compensation requests have been made)?	Compensation Policy Framework Section 3.1, #4	Go to # 3	Sub-project cannot proceed
3. Are there any outstanding disputes or claims to the land?	Compensation Policy Framework Section 3.1, #3	Project cannot proceed	Go to # 4
4. Is the land on property that is considered of sacred, religious, or cultural value?		Project cannot proceed	Go to #5
5. <i>Ensure that any agreements on temporary land use, e.g. clean up, are recorded, signed, and filed on site and with PMU offices.</i>			
<b>C. Permanent land use</b>			
1. Will the sub-project require use of land on a permanent basis?		Go to # 2	--
2. Has the land required for permanent	Compensation	Go to #3	Sub-project

<b>STEP 5: SCREENING FOR COMMUNITY SUPPORT AND IMPACT ON LAND USE</b>			
<b>Question</b>	<b>Guidance</b>	<b>Yes</b>	<b>No</b>
use by the sub-project been voluntarily offered for use by community members/customary landowners (i.e. no compensation requests have been made)?	Policy Framework Section 3.1, #4		cannot proceed
3. Does the Land Investigation Report show that there are disputes or claims to the land?	Compensation Policy Framework Section 3.1, #4	Sub-project cannot proceed	Go to #4
4. Is the land on property that is considered of sacred, religious, or cultural value?		Project cannot proceed	Go to #5
5. <i>Ensure that agreements on permanent land use, including that no compensation is required or will be paid are recorded, signed, and filed on site and with PMU offices</i>			
<b>D. Damage to property and assets</b>			
1. Will the sub-project activities result in damage to housing?	Compensation Policy Framework Section 3.1, #2	Sub-project cannot proceed	Go to #2
2. Will the sub-project activities result in damage to crops and economic trees?		Go to #3	Continue with preparation
<b>3. <i>Damage to crops and economic trees should be compensated as per a Compensation Action Plan. Refer to the Compensation Policy Framework for guidance on preparing a Compensation Action Plan.</i></b>			

## 5.5 Timing and responsibilities

Below is a summary of the process to be applied respectively under Component 2 and Component 3, as well as the responsibilities of the different parties in the screening of proposals. It also specifies the responsibilities for the preparation of the Environment Management Plans (EMP) of specific activities and the related timing.

### 5.5.1 Timing and responsibilities for Component 2 (Productive Partnerships)

<b>Step</b>	<b>When</b>	<b>By who</b>	<b>Actions</b>
1. Review of initial 2 page proposals submitted by Applicants	At the start of each semi-annual cycle	PMU (Component 2 Coordinator)	Using risk assessment form (Table 2), identify any potential environmental or social issue and advise Applicants to address them in full proposals
2. Preparation of proposals by Applicants	Each semi-annual cycle	Applicants (with support from qualified service providers as needed)	1. Complete screening to identify sub project environmental and

			social impacts using screening form in Appendix 2. 2. Prepare EMP to address management of these impacts using Table 5 and guidelines in Appendix 1 and attach to full sub project proposals.
3. Review of full proposals	Each semi-annual cycle	PMU (Component 2 Coordinator) with support from Environment Specialist as needed	Review completed Table 3 and screening form and undertake field checks as needed. Review EMP, request EMP strengthening as needed before submission to TAC
4. Appraisal	Each semi-annual cycle	Technical Appraisal Committee (TAC)	Review overall proposals including EMP for compliance with ESMF
5. Approval/Rejection	Each semi-annual cycle	TAC recommendation, then Industry Coordination Committee endorsement	If proposal still not compliant with ESMF and EMP still needs changes, Applicant advised by PMU with recommendation on issues to be addressed before submission to next round of call for proposals. If proposal unlikely to comply even with changes, advise Applicant that proposal cannot be financed, with reasons stated. If proposal approved (compliant), monitoring by PMU.

### 5.5.2 Timing and responsibilities for Component 3 (Market Access Infrastructure)

Step	When	By who	Actions
1. Preparation of investments	At the beginning of each cycle, after partnerships are approved	Transport Planner/Senior Engineer with support from the Environment Specialist	Conduct full initial screening as part of field assessment, and prepare EMP and CP (Compensation Plan) if applicable. Ensure that standard clauses as per section 6.0 of this ESMF are integrated in bidding documents
2. Approval of investments	Each cycle	PMU Manager, then endorsement by the Industry Steering Committee	Review and approve assessment, including EMP and CP if applicable (check and confirm compliance with ESMF)
3. Technical design	Each cycle	Design and supervision consultant	Effective implementation of EMP measures
4. Implementation	Each cycle	Design and supervision consultant	Supervise contractor (implementation of contract clauses)

## 6.0 Environmental Management Plan Guidelines

This section sets out the type of activities proposed under the PPAP, examines the potential environmental impacts and recommends the appropriate mitigation measures that need to be in place to minimise deleterious impacts and provides indicators for environmental monitoring. It builds on the findings of the Environmental Assessment.

### 6.1 Potential subprojects under the PPAP

Table 4 presents the descriptions of typical activities under the subprojects in the PPAP. These are not exhaustive but expected to be the most common activities under the project.

**Table 4: Description of potential subprojects in the PPAP**

<b>Component 2: Productive Partnerships</b>	
<b>Cocoa sector</b>	<b>Details</b>
a) Management activities supporting Cocoa Pod Borer (CPB) control including training on good farming systems.	Activities involve the training of cocoa farmers on aspects of IPM that will manage CPB within cocoa blocks. IPM requirement.
b) Provision of improved planting material (nurseries and budwood gardens) supplied to farmers to replace old/ affected trees.	Nurseries will supply cocoa seedlings to replace CPB affected trees within project provinces.
c) Promotion and support for rotational planting and cocoa garden rejuvenation and market driven diversification of cocoa farming system	The provision of tools, planting material and training to improve cocoa gardens , harvesting and the rehabilitation of old cocoa trees.
d) Adoption of quality of cocoa through the post harvest and processing technologies.	Improvement in the delivery of smoke free and air dried cocoa to meet high quality of cocoa through the replacement of faulty kiln pipes in cocoa fermenteries and the safe disposal of cocoa sludge from sweating.
<b>Coffee sector</b>	
a) The supported expansion of differentiated coffees such as organically grown and certified, Fair Trade and others and these support sustainability practices.	Activities involve more farmer groups to join up with a differentiated coffee practice within a particular area, e.g. Fair Trade and entails training and assistance.
b) Improvement in training of good farming practices and also the threat of the Coffee Berry Borer (CBB).	Similar to above activity, with more focus on individuals who are outside of the certification to ensure coffee pulp is returned under the coffee tree and the maintenance of shade for the reduction of weeds. CBB has not arrived in PNG as yet however awareness of the threat and the need for surveillance need to be given to the majority of coffee farmers through cooperative groups and other stakeholders.
c) Production of improved planting material for replanting and coffee garden rejuvenation and market driven diversification of coffee farming systems.	Nurseries to provide improved coffee seedlings and hybrids to replace over grown coffee with the opportunity to produce better output.
d) Adoption of quality of coffee through the post harvest and processing technologies.	Need for waste water management to ensure receiving water quality is maintained. Also is the provision of grants to factories to adopt low environmental impact technologies.
<b>Component 3: Market Access Infrastructure</b>	
a) Upgrading of feeder roads in project area	Rehabilitation and upgrading of existing roads to an all-weather standard to improve market access.
b) Upgrading of paths, wharves and jetties allowing the transportations of coffee and cocoa to be delivered	Cocoa delivered from ARB requires potential areas where ships may service these wharfs and jetties and

to marketing or processing points.	connecting tracks would need to be upgraded. The level of jetties will need to be assessed to determine the necessary capacity and load to ensure containment of the cocoa bags.
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## 6.2 Recommended Mitigation and Monitoring Measures

Tables 5-7 provide details on requirements to be included in individual Environmental Management Plans. These tables have been prepared so that the information appears in a logical and straightforward fashion that should make it easy to understand and use. For each of the mitigation measures presented, a method of implementation is proposed. Timing is extremely important with respect to effective implementation because some of the recommendations involve additional cost and can affect the subproject budget. The recommended methods of implementation include the following:

- **As a design guideline or recommendation**

The mitigation measures should be included in the initial design of the subproject/activities. Often, on road maintenance projects where anticipated environmental impacts are minimal, effective mitigation is simply a matter of ensuring that the roads are designed properly to control negative effects. The same applies for activities under Component 2. In general, if the design is properly done (as should be the case on this project), there will be NO IMPACTS at all. In a few cases, slight changes to design will eliminate the potential for impacts. In the case of civil works, of particular concern in the design stage is the location of material sources. These should be clearly identified and located on maps in order to ensure that no problems ensue once construction starts.

- **As a suggested clause in contracts, memorandum of understanding and agreements**

There should be a clause in the works contract document (or partnership agreement under component 2) referring to particular mitigation measures to be applied. There are a number of ways of addressing this. A common method is to simply refer, in the contract, to the Environmental Management Guidelines in existence, detailing any specific aspects not already in the guidelines. However, this assumes that all parties are familiar with and understand how to implement these guidelines, which is not always the case. Therefore providing specific clauses in the contract/agreement detailing measures and actions required on the part of the contractor/operator/partner is the recommended approach.

- **For civil works, inclusion in the Bill of Quantities (and usually also in the contract)**

Recommended mitigation measure should be included as an item in the Bill of Quantities. This will ensure that the item has been budgeted for and will be implemented as required. There are two approaches to deal with the incorporation of environmental management costs into the bids prepared. One is to request that the contractors include these costs in their rates. Although this works well in some instances, in many cases the contractors, in remaining competitive, will not adequately reflect the real cost of environmental mitigation in their bids. The second approach, recommended above, presents the mitigation measure as a line item in the Bill of Quantities. There would be an identified extra payment in the contract to ensure that the work is carried out by the contractor as specified. An example of clauses that could be included in the Bill of Quantities is as follows:

- the definition of exactly how many cubic metres of spoil and excess material must be disposed of

- a definition of how many hectares in total of replanting or revegetation must be undertaken and cost per hectare (or m<sup>2</sup>)
- cost of recommended erosion control structures (if over and above those that would normally be constructed as part of normal engineering design)

In order to achieve this in practice, it is recommended that the draft contract formats be reviewed by an Environment Specialist to ensure that the appropriate clauses have been incorporated. This could be undertaken by the PPAP Environmental Specialist.

As for the coffee and cocoa industry, appropriate mitigation measures will need to be overseen by the Component 2 Coordinator with guidance from the Environmental Specialist.

**Table 5: Proposed Mitigation and Monitoring Measures for Coffee and Cocoa**

Sub project level impact <b>Coffee</b>	Proposed Mitigation Measures	Monitoring Measures and applicable indicator	Costings
<p>Nursery establishment, bush clearance; disturbance to habitats; Chemical alteration of ecosystems by application of fertiliser, pesticides or herbicides. Fertilizer/Pesticide/ Herbicides Run off cause changes in the ecosystem and population of organisms.</p>	<ul style="list-style-type: none"> <li>• Ensure there is minimal clearing of vegetation for nursery sites. All mitigation measures here to be implemented by nursery staff.</li> <li>• Ensure nurseries are sited away from water ways or creeks.</li> <li>• Have fertilizer and herbicides applied individually with its correct dosage and frequency.</li> <li>• Ensure all fertilizers, pesticides and herbicides are stored in a closed area under a dry roof.</li> </ul>	<ul style="list-style-type: none"> <li>• All activities to be monitored by C2 coordinator in PMU in EHP through the Coffee Industry Coordinating Committee (Coffee ICC) and overseen by the Environmental Specialist (ES). <b>Indicators</b> <ul style="list-style-type: none"> <li>• Observation of nurseries away from creeks</li> <li>• Good farm practices</li> <li>• Fertilisers, pesticides and herbicides stored in secure location</li> </ul> </li> </ul>	<p>Costs as part of the operations of the Component 2 (C2) Coordinator and ES.</p>
<p>Rehabilitations of coffee plots with the clearing of overgrown coffee trees and the planting of improved coffee farming system; slight alteration of ecosystems.</p>	<ul style="list-style-type: none"> <li>• Removal of aging coffee trees to be replaced by new seedlings together with filling gaps in coffee gardens.</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly monitoring visits to selected farmer groups or cooperative's areas to establish this practice. <b>Indicators</b> <ul style="list-style-type: none"> <li>• Good house keeping of storage</li> </ul> </li> </ul>	<p>Costs as part of the C2 coordinator quarterly visits</p>
<p>Waste generated from coffee pulp and waste water, impact on the terrestrial and aquatic environment  Smoke from burning of coffee bean skins. Source of air pollution.</p>	<ul style="list-style-type: none"> <li>• Ensure coffee pulp is placed back under coffee trees or in food gardens to allow natural decomposition.</li> <li>• Coffee waste water to be kept in anaerobic ponds to allow oxidation and reduction of Biological Oxygen Demand (BOD) and Chemical Oxidation Demand (COD) to meet PNG Water Quality Standards before being discharged into the receiving waterways and rivers.</li> <li>• Mitigation measures to be implemented by wet factories</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly monitoring visits to selected wet processors/ coffee factories to establish this practice. <b>Indicators</b> <ul style="list-style-type: none"> <li>• Waste water pond adequate and BOD low at discharge point</li> <li>• If received grant, determine if recycling is working and receiving water minimal into water ways</li> </ul> </li> </ul>	<p>Similar comments as above</p>
<p>Significant water demand for processing of coffee beans</p>	<ul style="list-style-type: none"> <li>• Estimate incremental demand of water.</li> <li>• Confirm availability from sustainable</li> </ul>	<ul style="list-style-type: none"> <li>• Peak water demand in processing plants.</li> </ul>	<p>Similar comments as above.</p>

	<p>sources.</p> <ul style="list-style-type: none"> <li>• Determine Riparian flows.</li> <li>• Consult downstream users if water use will result in reduced flows affecting them.</li> <li>• Maintain riparian flows in dry season/or other times of peak demand.</li> </ul>	<ul style="list-style-type: none"> <li>• Riparian flows.</li> </ul>	
<b>Cocoa sector</b>			
<p>Nursery establishment, bush clearance; disturbance to habitats; Chemical alteration of ecosystems by application of fertiliser, pesticides or herbicides. Fertiliser/Pesticide/ herbicides Run off cause changes in the ecosystem and population of organisms.</p>	<ul style="list-style-type: none"> <li>• Ensure there is minimal clearing of vegetation for nursery sites. All mitigation measures here to be implemented by nursery staff.</li> <li>• Ensure nurseries are sited away from water ways or creeks.</li> <li>• Have fertiliser and herbicides applied individually with its correct dosage and frequency.</li> <li>• Ensure all fertilisers, pesticides and herbicides are stored in a closed area under a dry roof.</li> </ul>	<ul style="list-style-type: none"> <li>• All activities to be monitored by PMU in ENB through the C2 coordinator and overseen by the Environmental Specialist (ES) during visits.</li> </ul> <p><b>Indicators</b></p> <ul style="list-style-type: none"> <li>• Observation of nurseries away from creeks</li> <li>• Good farm practices</li> <li>• Fertilisers, pesticides and herbicides stored in secure location</li> </ul>	<p>Costs as part of the commitment of the C2 coordinator and ES's visits.</p>
<p>Replacing CPB affected trees Destroying host insects habitats.</p>	<ul style="list-style-type: none"> <li>• Cutting of old cocoa trees to be heaped in an area where these can dried out and used as fuel wood for fermentery. Mitigation measures here by individual block holders</li> <li>• Loping of cocoa trees to be in line with IPM height recommendations of 3 metres.</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly monitoring visits to selected farmer groups or cooperative's areas to establish this practice.</li> </ul> <p><b>Indicators</b></p> <ul style="list-style-type: none"> <li>• Good house keeping of storage</li> </ul>	<p>Similar comments as above</p>
<p>Waste generated from cocoa pods and sludge, potential impact on the terrestrial environment  Smoke from fermentery onto cocoa beans, a nuisance for the maintenance of cocoa quality.</p>	<ul style="list-style-type: none"> <li>• Ensure waste generated from the cocoa "sweating" process is placed under cocoa trees or in food gardens to allow natural decomposition. No use for this in PNG at the moment, although some have stated it to be used for liquor. Mitigation measures to be implemented by individual farmers and overseen by PMU.</li> <li>• To ensure flue pipes are replaced to</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly monitoring visits to selected farmer groups areas and also industry partners to observe practices.</li> </ul> <p><b>Indicators</b></p> <ul style="list-style-type: none"> <li>• Clear disposal of sludge under gardens</li> <li>• Creek to be clear of sludge</li> <li>• Cocoa beans are free from smoke taint</li> </ul>	<p>Similar comments as above</p>

	ensure smoke does not taint cocoa beans.		
Use of firewood for cocoa drying could be an issue in some areas	<ul style="list-style-type: none"> <li>Promote efficient driers and combined/solar driers under the project</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring by Component 2 Coordinator; specific emphasis on clean technologies in call for proposals</li> </ul> <p><b>Indicators</b></p> <ul style="list-style-type: none"> <li>Number of improved driers</li> </ul>	Similar comments as above

**Table 6: Proposed Mitigation and Monitoring Measures for Feeder Roads and Paths**

Sub project level impact Component 3	Proposed Mitigation Measures	Monitoring Measures and applicable indicator	Costings
<p><b>Clearing of the right- of-way (ROW) and Social Issues</b></p> <ul style="list-style-type: none"> <li>• Dissatisfaction on the part of potential persons that may have fruit trees or other structures on current ROW.</li> <li>• Disturbances from construction activities, Safety problems</li> <li>• Areas of historical or archaeological significance could be discovered and affected (chance finds)</li> </ul>	<p>Obtain broad community consent as a prerequisite to work being undertaken on roads.</p> <p>Prepare a Compensation Action Plan following guidelines laid out in the Compensation Policy Framework, including: obtaining and documenting agreements on land use from communities, specifically, compensation for lost food crops and economic trees</p> <p>Adequate compensation shall be provided to all affected landowners for the loss of the food crops and economic trees according to the guidelines set out in the Compensation Policy Framework.</p> <p>Identify culturally sensitive areas. Projects which impact historical or archaeological sites will not be financed.</p> <p>All required safety measures shall be implemented. This includes occupational health and safety requirements on construction sites and in work camps.</p> <p>Maximise the opportunities for local people on the project. This could include hiring of day labour for gravel crushing, maintenance of revegetation areas, and any other activities.</p> <p>Communities and landowners shall always be consulted on the disposal areas, removal of trees and other vegetation, and stockpiles for spoil material.</p> <p>Include women's and other community groups in project activities.</p>	<p>Monitor use of CPF by reviewing Compensation Plans (CP) prepared and their implementation.</p> <p>Ensure that affected parties are satisfied.</p> <p>All activities within all feeder roads /paths to be overseen by the Provincial Lands Officer and Community Liaison Officer together with the Transport Planner/Sr Engineer (TPSE) in the PMU.</p> <p>Indicator: Grievances registered with Project Management Unit.</p>	<p>Compensation as per the CP.</p> <p>Transport Planner/Sr. Engineer (TPSE) costs</p>
<p><b>Operating of Labour Camp/s (if required)</b></p> <ul style="list-style-type: none"> <li>• Introduction of small labour force with different attitudes resulting in social conflicts</li> <li>• Introduced health problems such as STDs and HIV</li> </ul>	<p>Camps shall not be located near settlements or near drinking water supply intakes.</p> <p>They shall not negatively impact local residents' access to drinking water.</p> <p>Camps shall not be located in the vicinity of landslides and floodplains.</p> <p>The camp shall be operated within a self-sufficient infrastructure. No trees shall be cut for fuel wood, and removal of vegetation shall be minimised.</p> <p>The contractor shall prohibit employees from poaching wildlife</p>	<p>Camp is self sufficient in food, water and fuel: No complaints from residents, local prices remain stable.</p> <p>Provision of water and sanitation facilities constructed no disruption in local water supplies.</p> <p>Waste disposal: Upon completion, camp site is neat and no rubbish and materials remain.</p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

<ul style="list-style-type: none"> <li>• Deforestation, excessive use of fuelwood</li> <li>• Competition for scarce natural resources and food supplies</li> <li>• Pollution of surface and groundwater supplies from unsanitary waste disposal practice</li> </ul>	<p>and cutting trees. The contractor shall be responsible for the action of their workers.</p> <p>Water and sanitation facilities shall be provided for employees.</p> <p>In water deficient areas, the contractor shall haul water from a source outside the area. Solid waste shall be managed according to the following preference hierarchy: recycling, burial or burning. Green or organic wastes shall be composted or used as animal food.</p> <p>Water and pit latrines shall be provided for employees. Use above-water pit latrines or composting toilets at residential construction sites.</p> <p>Sewage shall be disposed of into hygienic pit latrines or into a septic tank system. In low-lying areas the latrine areas shall be elevated and constructed on a mound of sandy sediment to control seepage into the local groundwater.</p> <p>The contractor shall recruit, to the maximum extent possible, local persons for the labour force, and shall provide appropriate training where necessary.</p>		
Sub project level impact	Proposed Mitigation Measures	Monitoring Measures and applicable indicator	Costings
<p><b>Feeder Road Rehabilitation Erosion Control Management And Monitoring</b></p> <p><b>Objective</b></p> <p>To minimise the erosion of soil from sites</p>	<p>All road contractors will apply the following methods of erosion control. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• Minimise as far as practicable the time that surfaces remain bare.</li> <li>• A staged road reconstruction plan will be followed so that road reconstruction and earthworks are completed in stages (100m stages recommended) so that only a minimal area of ground is open or clear at anyone time;</li> <li>• Progressively re-vegetate and mulch disturbed areas as soon as practicable after completion of work;</li> <li>• Keep vegetation clearing to a minimum and re-vegetate cleared sites, in consultation with the landowner(s);</li> <li>• On steep slopes, and where otherwise appropriate, clear vegetation using chainsaws so that tree roots can remain to</li> </ul>	<p><b>Monitoring</b></p> <p>Monitoring of compliance with these methods of erosion control by the contractor at each site will be carried out by the TPSE and will occur by way of regular (at least once every two weeks) visual inspections to ensure that appropriate control structures have been installed and are operating effectively.</p> <p><b>Corrective Action</b></p> <p>Where visual inspection identifies that damage has occurred to areas then these shall be rehabilitated. The contractor will be reminded that these form Conditions of Contract and a failure to comply could lead to a breach of contract action being</p>	<p>All costs associated with these activities will be borne by the project through routine field inspection by the TPSE.</p>

	<p>help stabilise slopes;</p> <ul style="list-style-type: none"> <li>• Erosion control structures such as stormwater diversion (catch) drains and bunds will be constructed and maintained to temporarily divert stormwater around construction sites;</li> <li>• Onsite drainage schemes will be constructed and maintained to minimise ponding and uncontrolled runoff;</li> <li>• Avoid earthworks during high rainfall periods, if possible;</li> <li>• Side drains (depth 500mm or greater) will be installed along all roads to prevent roadside "ponding" and surface wash;</li> <li>• Design drains and culverts to remove all runoff water without scour. On steep slopes culverts may need to be stepped using rock slabs or gravel in gabion baskets;</li> <li>• Ensure major roads to be used by 12-14 tonne trucks have a base of at least 300mm to reduce the need for future rehabilitation;</li> </ul>	<p>taken.</p> <p><b>Responsible Party</b></p> <p>Under the terms of the contract, the contractor will be responsible for implementing and self-monitoring the methods of erosion control detailed above. The TPSE will be responsible for monitoring each contractor's compliance with these at all sites. Enforcement will be through advice and warning to the contractor, and if the failure to comply continues, through the application of Breach of Contract procedures</p>	
<p><b>FEEDER ROAD REHABILITATION; DUST CONTROL MANAGEMENT and MONITORING</b></p> <p><b>Objective:</b></p> <p>To minimize the generation of dust at along the feeder roads.</p>	<p>All road contractors will apply the following methods of dust control. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• All exposed /bare soil surfaces are to be mulched and re-vegetated as soon as practicable after clearing;</li> <li>• A staged road reconstruction plan will be followed so that road reconstruction and earthworks are completed in stages (100m stages recommended) so that only a minimal area of ground is open or clear at any one time;</li> <li>• During dry weather water spray will be used to dampen reconstruction working surfaces and gravels, newly-laid road surfaces and newly formed roadsides (including newly mulched and re-vegetated roadsides); if so directed by the Sr Engineer.</li> <li>• A speed restriction of 40 km per hour will be imposed on all gravel haul trucks;</li> </ul>	<p><b>Monitoring</b></p> <p>Monitoring of compliance with these methods of dust control by the contractor and or gravel pit operator at each site will be carried out by the TPSE. This will comprise regular (at least once every two weeks) visual inspections to ensure that appropriate control structures have been installed and are operating effectively.</p> <p>The TPSE will also enquire of roadside householders (focusing on the women of the households) whether they have experienced any nuisance or concerns regarding dust from passing gravel trucks or the road construction works at each site.</p> <p><b>Corrective Action</b></p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

		<p>Where inspection indicates that one or more of the above methods have not been complied with by a contractor or gravel pit operator, the contractor or operator will be reminded that these form Conditions of Contract and a failure to comply could lead to a breach of contract action being taken.</p> <p><b>Responsible Party</b></p> <p>Under the terms of the contract, the contractor will be responsible for implementing and self-monitoring the methods of erosion control detailed above. The TPSE will be responsible for monitoring each contractor's compliance with these at all sites.</p> <p>Enforcement will be through advice and warning to the contractor, and if the failure to comply continues, through the application of Breach of Contract procedures.</p>	
<p><b>SEDIMENTATION CONTROL MANAGEMENT AND MONITORING</b></p> <p>Objective:</p> <p>To minimise the impact of sedimentation on waterways</p>	<p>All road contractors will apply the following methods of sedimentation control. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• Complete reconstruction works and earthworks in stages so that only a minimal area of ground is exposed at any one time;</li> <li>• Avoid earthworks during periods of high rainfall, if possible;</li> <li>• Minimise the number of discharge points from the site;</li> <li>• Construct control structures such as sumps and settlement ponds around drainage points to trap sediment;</li> </ul>	<p>The TPSE will conduct regular inspections of all sites to assess the contractor's compliance with the sedimentation control measures set out above.</p> <p>Where road reconstruction crosses a permanent stream or other permanent watercourse, or where it runs adjacent to a permanent stream or watercourse, the TPSE will carry out a baseline visual</p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

	<ul style="list-style-type: none"> <li>• Avoid discharging directly into streams or other water-bodies, or into garden areas. Site stormwater discharges should be constructed with flow breakers and should be located well away from streams and directed into areas of well established dense vegetation that will disperse the flow over a wide an area as possible to maximise rapid percolation and minimise overland flows;</li> <li>• Provide silt fences or similar around areas susceptible to erosion;</li> <li>• Protect construction sites from off-site surface runoff using bunds or trenches in order to minimise the amount of on-site stormwater and ponding;</li> <li>• Locate stockpiles and spoil-heaps away from any drainage channels or waterways, and contain them with silt fences and containment trenches;</li> <li>• Do not allow machinery to enter a watercourse unless this is unavoidable;</li> <li>• Avoid vehicle fording of streams. If this cannot be avoided, the vehicles must be thoroughly washed down, well away from the stream before the vehicle enters it;</li> <li>• Where weirs and diversion channels are constructed around culvert installation and headwall construction works, the walls must be properly graded and compacted to minimise the risk of collapse and entrainment of sediment in the diversion channel;</li> <li>• All diversion channel bends should be constructed with as large a radius as possible to minimise the risk of undercutting of the bend walls by the diverted waterflow;</li> <li>• Diversion channel gradients should be minimised as far as practicable and where necessary flow breakers, such as rocks or widening of the channel should be installed <i>I</i> constructed to minimise flow velocities;</li> <li>• Where culvert headwalls are constructed in-situ (for example winged headwalls), a diversion channel must be constructed</li> </ul>	<p>inspection of the streambed, water quality (noting any turbidity or coloration of the water and water flow at one or more sites upstream and two or more sites downstream of the construction site before construction commences. In particular the visual inspection will assess and record any differences in the streambed morphology and benthic components between the upstream and downstream sites, and any changes (increase or decreases) in the water turbidity and colouration, and water flow between these sites. These inspections will be carried out on at least two occasions, one of which should be during dry weather conditions and one during or immediately following rainfall.</p> <p>A field record including observations of water conditions (flow assessments, clarity, colour, odour and the presence of any scums), stream bed, in-stream habitats and streamside habitats, and weather will be made at each site on each occasion.</p>	
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	<p>so that the concreting works are carried out in the dry. All construction debris and spilt concrete fines must be removed from the dry site before the flow is restored to avoid any risk of downstream contamination of the watercourse by concrete fines or other construction materials.</p>		
<p><b>GRAVEL EXTRACTION MANAGEMENT and MONITORING</b></p> <p><b>Objective</b></p> <p>To minimize the long term impacts of gravel extraction.</p>	<p>All contractors operating gravel pits will apply the following methods of control. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• the contractor shall prepare a Gravel Extraction Plan for each site providing a staged extraction program and specifying the measures to be taken at each site to minimise erosion and sedimentation of watercourses;</li> <li>• Where possible, extract gravel from dry gravel pits rather than gravel pits in river channels;</li> <li>• Where river gravel is extracted, machinery or equipment must not be allowed to enter the water channel, and extraction of gravels should be restricted to no closer than a minimum 5m from the water channel;</li> <li>• under high flow conditions;</li> <li>• Ensure containment of sediment-loaded runoff and contaminants at all quarry sites;</li> <li>• Employ safety measures to avoid any loss of load from trucks;</li> <li>• Ensure stability of exposed quarry faces or overburden stockpiles;</li> <li>• Bund refueling areas and ensure containment of any oil leaks or spillages;</li> <li>• Specify means employed to protect the channel banks, avoid discontinuities in the river bed, minimise erosion upstream and sediment loading problems downstream of the quarry site.</li> </ul>	<p>The TPSE will conduct regular (at least once every two weeks) inspections of all gravel extraction sites to assess the contractor's compliance with the control measures set out above.</p> <p>The TPSE will also ensure that regular inspection (at least once a month) of water quality upstream and downstream of the gravel extraction site is carried out throughout the period the site is operating and for at least three (3) months after all gravel extraction operations cease.</p> <p>This water quality inspection program will be based on and follow a similar format to the monitoring program proposed for the monitoring of sedimentation impacts (see previous).</p> <p>A baseline series of water quality observations will be conducted by the Environmental Specialist prior to extraction operations commencing at the site and will comprise of observations carried out at three locations (one upstream, two downstream) on at least two occasions (one following a period of dry weather and one during or immediately following rainfall). A field record including observations of water conditions (flow assessments, clarity, color, odor and the presence of any</p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

		<p>scums), stream bed, in-stream habitats and streamside habitats, and weather will be made at each site on each occasion.</p> <p><b>Corrective Action</b></p> <p>Where inspection by the TPSE indicates that one or more of the above methods of control have not been complied with by a contractor operating the gravel pit / extraction site, the contractor will be reminded that these form Conditions of Contract and a failure to comply could lead to a breach of contract action being taken.</p> <p>Where local landowners and other water users express their concern regarding water quality, the gravel extraction site will be inspected and additional methods of control implemented. Where the local landowners and other water users provide substantive comments on water tainting or contamination, additional water quality data will be immediately collected and expert opinion sought (see above).</p> <p><b>Responsible Party</b></p> <p>Under the terms of the contract, the contractor operating the gravel pit extraction site will be responsible for implementing and self-monitoring the mitigation measures and methods of control detailed above: The TPSE will be responsible for monitoring each contractor's compliance with these at all sites.</p>	
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		Enforcement will be through advice and warning to the contractor, and if the failure to comply continues, through the application of Breach of Contract procedures.	
<p><b>PUBLIC DISRUPTION AND SAFETY MANAGEMENT and MONITORING</b></p> <p><b>Objective</b></p> <p>To minimise disruption to communities during construction</p>	<p>All road contractors will apply the following measures to minimize public disruption and ensure public safety. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• Inform local authorities and local landowners of project plans, works schedule and location of proposed works;</li> <li>• Maximise opportunities for local employment associated with construction activities;</li> <li>• Include women's and other community groups in project activities;</li> <li>• Ensure that previously identified cultural sites are not disturbed;</li> <li>• Where objects of archaeological or historical importance are located during construction works, cease construction work and notify the Engineer who will in turn notify the PNG National Museum and other relevant authorities at local level. PPAP will not finance sub-projects which impact these sites;</li> <li>• Where possible, program work such that high noise levels occur during times of least impact (Le. during normal working hours avoiding Saturdays and Sundays);</li> <li>• Minimise noise impacts by maintaining construction equipment in good order;</li> <li>• Discuss with externally-sourced construction workers the need for considerate and safe behaviour while located in the area; Raise awareness amongst landowners / villagers of HIV/AIDS.</li> </ul>	<p><b>Monitoring</b></p> <p>Regular monitoring shall be undertaken by the contractor and the TPSE by way of discussions with local residents, with a particular focus on the women, youth and elderly, to ensure that communities are not unduly affected by construction activities and that all local people are aware of the safety risks and the appropriate measures they should take to avoid injury or accident.</p> <p><b>Corrective Action</b></p> <p>Any complaints from the community will be investigated and action taken, if necessary, to minimise the specified disruption. Where inspection or substantiated complaints indicate that one or more of the above measures have not been complied with by a contractor or gravel pit operator, the contractor or operator will be reminded that these form Conditions of Contract and that a failure to comply could lead to a breach of contract action being taken.</p> <p><b>Responsible Party</b></p> <p>Under the terms of the contract, the contractor will be responsible for</p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

		<p>implementing and self-monitoring the measures to minimise public disruption and ensure public safety detailed above. The TPSE will be responsible for monitoring each contractor's compliance with these at all sites.</p> <p>Enforcement will be through advice and warning to the contractor, and if the failure to comply continues, through the application of Breach of Contract procedures.</p>	
<p><b>GENERAL SITE MANAGEMENT and MONITORING</b></p> <p><b>Objective:</b></p> <p>To provide and maintain a clean and safe working environment</p>	<p>All road contractors will apply the following methods of general site management to maintain a clean and safe working environment. Compliance by the contractor will be regularly checked by the TPSE:</p> <ul style="list-style-type: none"> <li>• Provide and maintain adequate warning signs at construction site boundaries;</li> <li>• Maintain materials used for vehicle maintenance and repair in a clearly marked and secure area;</li> <li>• Spray water on exposed surfaces, resulting from construction works, during dry periods and stabilise disturbed areas as soon as practicable to prevent dust problems;</li> <li>• Wet any spoil loads being carried in open trucks in dry weather;</li> <li>• Operate and maintain plant and equipment in accordance with manufacturer's instructions;</li> <li>• Provide an impervious and bunded area for oil and fuel transfer and cleaning of equipment and vehicles;</li> <li>• Minimise waste generated through reduction, reuse, recycling and composting;</li> <li>• Prior to removal from site, store all waste in suitable areas/receptacles to prevent hazards such as fires, attraction to vermin or dissemination of dust;</li> </ul>	<p><b>Monitoring</b></p> <p>Regular monitoring shall be undertaken by the TPSE by way of visual inspection to ensure that all construction sites fully comply with the measures specified above.</p> <p>The TPSE will also enquire of local residents, with a particular focus on women, youth and the elderly, whether they have experienced any nuisance or have concerns regarding the construction site and its operations.</p> <p><b>Corrective Action</b></p> <p>Any complaints from the community will be investigated and action taken, if necessary, to minimise the specified disruption.</p> <p>Where inspection or substantiated complaints indicate that one or more of the above measures have not been complied with by a contractor or gravel pit operator, the contractor or operator will be</p>	<p>Costs will be borne by the project through the visit by the TPSE during his field inspection.</p>

	<ul style="list-style-type: none"> <li>• Dispose of all inorganic construction waste at a Council-designated dump site;</li> <li>• Remove all disabled machinery from the project site;</li> <li>• Ensure adequate sanitation is provided for construction workers and that it does not contaminate groundwater;</li> <li>• Minimise depressions and screen areas of standing water to reduce potential for mosquito breeding;</li> <li>• Ensure occupational health and safety measures and equipment are in place on construction sites and that workers receive appropriate training/induction (including in HIV / AIDS).</li> </ul>	<p>reminded that these form Conditions of Contract and that a failure to comply could lead to a breach of contract action being taken.</p> <p><b>Responsible Party</b></p> <p>Under the terms of the contract, the contractor will be responsible for implementing and self-monitoring the general site management measures detailed above. The TPSE will be responsible for monitoring each contractor's compliance with these at all sites.</p> <p>Enforcement will be through advice and warning to the contractor, and if the failure to comply continues, through the application of Breach of Contract procedures.</p>	
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**Table 7: Proposed Mitigation and Monitoring Measures for Wharves and Jetties**

Subproject level impact	Proposed Mitigation Measures	Monitoring Measures and applicable indicators	Costings
Rehabilitation of wharves and jetties	<p>Ensure work on the wharf and jetties are limited to the extent of the described works</p> <p>Design and siting, avoid sensitive areas</p> <p>Siltation control:</p> <ul style="list-style-type: none"> <li>• Silt curtains</li> <li>• Settling ponds</li> <li>• Appropriate technology (use what is practical to minimize impact of jetties or wharves on the surrounding marine ecosystem)</li> </ul>	<p>Regular monitoring to ensure that the scope of work on the jetty and wharf are followed.</p> <p>Monitor after construction to determine if impact would have reduced and reached background levels</p>	<p>Monitoring costs are those of TPSE and ES field visits.</p>

## **6.3 Environmental Supervision and Monitoring**

The main objective of environmental supervision is to ensure that the recommended mitigation measures are implemented as required by the works contractor (component 3) and project partners (component 2). In road rehabilitation projects, environmental supervision is often part of the standard construction supervision. It will be important to specifically outline exactly what needs to be focused on during the supervision. By including clauses into a contract document and specific items in the Bill of Quantities forming part of the contract, monitoring and supervision of the application of mitigation measures is automatically included in the normal engineering supervision of the contract on a day-to-day basis. Once the Environmental Specialist is in place under PPAP, s/he would ensure appropriate training of key PPAP staff and quality control of the supervision of environmental mitigation measures. DEC could also be invited to participate in regular reviews.

A very important aspect of environmental management is environmental monitoring. Monitoring has two objectives. The first and simplest is compliance monitoring which basically ensures that mitigation measures are properly implemented. This is part of the supervisory activities discussed above and is generally the one that most monitoring programmes focus on. Detailed monitoring recommendations are included in Table 9 - 11 including suggested parameters and indicators.

The second aspect of environmental monitoring is impact monitoring. The main objective of impact monitoring is to determine whether the environmental mitigation measures implemented prove to be effective in reducing anticipated impacts. This monitoring allows the mitigation measures to be modified if the original measures prove to be ineffective.

Impact monitoring is the most difficult type of monitoring as it sometimes requires long term programmes, some existing expertise and adequate funding. Obviously, a clear commitment to effective environmental management is necessary in order for an impact monitoring programme to be successful.

## **7.0 Institutional Requirements for Effective Implementation of the ESMF**

### **7.1 Public Participation**

World Bank requirements OP 4.01 stipulate that the involvement of the public in any project is an important aspect of environmental management.

Any road rehabilitation project in PNG is likely to have at least some impacts on local people, and their involvement at the earliest stages of project feasibility is essential, particularly where any asset loss, however minor, is likely. In addition, the particular conditions in PNG make it important for villagers to be directly involved in the maintenance works, requiring a more creative and flexible approach to contracting than is normally the case. In PNG, the DOW works very closely with the Department of Lands in order to ensure that land issues are addressed at the earliest possible stages. It is recommended that this structure continue to be applied in the present project. The Compensation Policy Framework

in Part III of the Environmental Management and Social Framework states these arrangements.

PPAP should receive a confirmation of broad community support for specific subprojects, therefore each subproject should be prefaced with full engagement with a broad representation of the community to be affected. Community support should be documented (as per earlier forms and the CPF indicate).

## **7.2 Staffing, Technical Assistance and Training Requirements for DAL, CB and CIC**

### **7.2.1 Technical Assistance**

The proposed Project Coordination Unit (PCU) within DAL will provide coordination of the PPAP at the national level. Discussions with the Deputy Secretary - Science and Technology and other of DAL, Cocoa Board and CIC determined the need for Technical Assistance to support the implementation of the ESMF. The TA (Environmental Specialist) would also build capacity of key PCU and PMU staff, as well as other relevant staff in those institutions. This Technical Assistance will be required for three months in year 1 and on a decreasing basis in subsequent years. Upon engagement, the Environmental Specialist will be required to visit the project provinces to oversee the EMP being implemented through the PPAP, ensure that all workflows and processes for the implementation of the ESMF are in place and operating, and start training and capacity building of key staff. S/he will then continue to ensure that such capacity is build within the implementing agencies, and with key staff in the PMUs (such as the Component 2 coordinator and Transport Planner/Sr. Engineer). By providing quarterly report to the DEC, the PMUs will be adhering to the requirements of the Environmental Act 2000.

Terms of Reference for this position can be found in Appendix 4.

### **7.2.2 Institutional Framework for Environmental and Social Management**

The main institutions with key responsibilities for environment and social management are the Project Management Units in CIC and Cocoa Board and the Project Coordination Unit at DAL.

#### **7.2.2.1 National Level**

Overall policy guidance and coordination of the PPAP will be provided through the Project Steering Committee (PSC). The PSC is responsible for overseeing the implementation of the PPAP and monitoring its performance to ensure that the goals of the program are being achieved. The PSC meets at least six-monthly, and consists of representatives of the commodity boards and other stakeholders in the PPAP. DEC is a member of the PSC.

The Project Coordinator heading the PCU in DAL has overall responsibility for the management of all monitoring and evaluation activities under the PPAP. S/he will therefore have overall responsibility for environmental and social monitoring, with support from the Environment Specialist and other technical staff.

### 7.2.2.2 Industry Level

Implementation of the PPAP is the responsibility of the Coffee Industry Corporation (CIC) and the Cocoa Board (CB), through their respective PMUs, which report to the CEO of the CIC and Cocoa Board (respectively) through their Project Manager (PM). The PMUs are responsible for daily management of project implementation, including the effective implementation of the ESMF.

The PMU based in Goroka within the CIC will be guided by a Coffee Industry Coordination Committee (CICC), which would also act as an industry-level steering committee for the PPAP. Similarly, the PMU based in Kokopo within the Cocoa Board would be guided by a Cocoa Industry Coordination Committee (Cocoa ICC), which would act as an industry-level steering committee for the PPAP. Due to the special status of ARB, a Deputy PMU Manager reporting to the Project Manager in Kokopo would be based in the Cocoa Board office in Buka. S/he will be responsible for ensuring the effective implementation of the ESMF in ARB.

A Transport Planner/Senior Engineer will also be part of each PMU and be responsible for the implementation of Component 3. This includes the implementation of the ESMF at component level.

Similarly, the responsibility for the management and supervision of the implementation of the ESMF for Component 2 activities will rest with the Component 2 Coordinator in each PMU.

Both PMUs will be supported by the Environment Specialist, and by a Technical Appraisal Committee including expertise on social sciences. They will also be supported by the Provincial Lands Officer (PLO) and Community Liaison Officer (CLO). Responsibilities for the environmental and social management of PPAP will include:

- (i) complying with the relevant national laws regarding the environment and with all social guidelines set by the GoPNG, and all World Bank Safeguards policies;
- (ii) supervising the implementation of PPAP subproject activities according to and consistent with the provisions of this ESMF;
- (iii) ensuring that the mitigation measures are complied with during identification, implementation/construction and operation stages of PPAP activities, by monitoring these activities and by periodically reporting to the PMU and PCU; maintaining an adequate budget to implement the appropriate procedures and practices for their operations; and
- (vi) complying with any directives that may be issued from time to time from DEC or DAL.

### 7.2.2.3 Summary Institutional Roles and Responsibilities for Environment and Social Management

**Table 8: Key responsibilities**

Position	Main responsibility
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Project Steering Committee and Industry Coordination Committees	Overall policy guidance to the PCU and PMUs
Project Coordinator (PCU, DAL)	Overall compliance with the ESMF
Environmental Specialist	Quality control and capacity building
Project Managers (CB and CIC)	Compliance with the ESMF for all activities under their responsibility/PMU
Component 2 Coordinator	Compliance with the ESMF for all Component 2 activities
Technical Appraisal Committee	Appraisal of subprojects under Component 2 including environmental and social aspects.
Transport Planner/Senior Engineer	Compliance with the ESMF for all Component 3 activities

The project costs include a budget to ensure the mobilization of the required TA (Environmental Specialist) as well as an operational budget to ensure that all key staff above are able to carry out their due diligence in ensuring that all approved activities comply with the provisions of this ESMF.

## Appendix 1 Guidelines for an Environmental Management Plan (EMPs) for Subprojects under Component 2 and Investments under Component 3

EMP Contents usually are:

- Project Description.
- Description of adverse impacts: The anticipated impacts are identified and summarized.
- Description of Mitigation Measures: Each measure is described with reference to the effects it is intended to deal with. As needed, detailed plans, designs, equipment description, and operating procedures are described.
- Description of monitoring program: Monitoring provides information on the occurrence of impacts. It helps identify how well mitigation measures are working, and where better mitigation may be needed. The monitoring program should identify what information will be collected, how, where and how often. It should also indicate at what level of effect there will be a need for further mitigation. How environmental impacts are monitored is discussed below.
- Responsibilities: The people, groups, or organizations that will carry out the mitigation and monitoring activities are defined, as well as to whom they report and are responsible. There may be a need to train people to carry out these responsibilities, and to provide them with equipment and supplies.
- Implementation Schedule: The timing, frequency and duration of mitigation measure and monitoring are specified in an implementation schedule, and linked to the overall sub project schedule.
- Cost Estimates and Source of Funds: These are specified for the initial sub project investment and for the mitigation and monitoring activities as a sub project is implemented. Funds to implement the EMP will be part of the PPAP budget.

### Monitoring methods:

Methods for monitoring the implementation of mitigation measures or environmental and social impacts should be as simple as possible, consistent with collecting useful information, so that the sub project implementer/farmer group can apply them. For instance, they could just be regular observations of the sub project activities or sites during construction and then when in use. Are plant/equipment being maintained and damages repaired, does a water source look muddier/cloudier different than it should, if so, why and where is the potential source of contamination. Most observations of inappropriate behavior or adverse impacts should lead to common sense solutions. In some case, e.g. high emission of green house gases or loss/death of flora and fauna, there may be need to require investigation by a technically qualified person.

## Appendix 2: Environmental and Social Assessment Form

The Environmental and Social Assessment Form (ESAF) has been designed to assist in the evaluation of sub-projects in the PPAP. The form is designed to place information in the hands of reviewers so that mitigation measures, if any, can be identified and/or that requirements for further environmental analysis be determined.

The ESAF contains information that will allow reviewers to determine if endangered or threatened species or their habitat, protected areas or forest are likely to be present, and if further investigation is therefore required. The ESAF will also identify potential socioeconomic impacts that will require mitigation measures and or resettlement and compensation.

Name of Sub project:

Name of Sub-project's sponsor:

Name of the District:

Name of the Province and LLG:

Name, department, job title, and contact details for the person who is responsible for filling out this form.

Name:

Department and title:

Name of Provincial Body:

Telephone number:

Fax number:

E-Mail address:

Date:

Signature:

### 1. Sub project Description

Provide information on the type and scale of the sub project, sub project area, equipment and buildings, amount of waste (solid, liquid and air generation), including construction work areas and access roads. (Complete on a separate sheet of paper if necessary).

### 2. The Natural Environment

(a) Describe the vegetation/trees in/adjacent to the sub project area

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(b) Estimate and indicate where vegetation/trees might need to be cleared

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(c) Are there any environmentally sensitive areas or threatened species (specify below) that could be adversely affected by the sub project? Yes \_\_\_\_\_ No \_\_\_\_\_

(i) Natural Forests Yes \_\_\_\_\_ No \_\_\_\_\_

(ii) National Parks Yes \_\_\_\_\_ No \_\_\_\_\_

(iii) Rivers Yes \_\_\_\_\_ No \_\_\_\_\_

(iv) Lakes Yes \_\_\_\_\_ No \_\_\_\_\_

(v) Wetlands (swamps, polder areas, seasonally inundated areas) Yes \_\_\_\_\_  
No \_\_\_\_\_

(vi) Habitats of endangered species for which protection is required under Papua New Guinea laws and/or international agreements. Yes \_\_\_\_\_ No \_\_\_\_\_

(vii) Others (describe). Yes \_\_\_\_\_ No \_\_\_\_\_

### 3. River Ecology

Is there a possibility that the river ecology will be adversely affected? Attention should be paid to water quality and quantity; the nature, productivity and use of aquatic habitats, and variations of these over time.

Yes \_\_\_\_\_ No \_\_\_\_\_

#### 4. Protected areas

Does the sub project area (or components of the sub project) occur within/adjacent to any protected areas designated by government (national park, national reserve, world heritage site etc.)

Yes \_\_\_\_\_ No \_\_\_\_\_

If the sub project is outside of, but close to, any protected area, is it likely to adversely affect the ecology within the protected area areas (e.g., interference with the migration routes of mammals or birds)

Yes \_\_\_\_\_ No \_\_\_\_\_

#### 5. Geology and Soils

Based upon visual inspection or available literature, are there areas of possible geologic or soil instability (erosion prone, landslide prone, subsidence-prone)?

Yes \_\_\_\_\_ No \_\_\_\_\_

Based upon visual inspection or available literature, are there areas that have risks of large scale increase in soil leaching and/or erosion?

Yes \_\_\_\_\_ No \_\_\_\_\_

#### 6. Landscape/aesthetics

Is there a possibility that the sub project will adversely affect the aesthetic attractiveness of the local landscape?

Yes \_\_\_\_\_ No \_\_\_\_\_

#### 7. Invasive plant species along minor road routes

Is the sub project likely to result in the spread of invasive plant species (along minor road routes)?

Yes \_\_\_\_\_ No \_\_\_\_\_

#### 8. Historical, archaeological or cultural heritage site

Based on available sources, consultation with local authorities, local knowledge and/or observations, could the sub project alter any historical, archaeological or cultural heritage site (including cemeteries, memorials and graves) or require excavation near same?

Yes \_\_\_\_\_ No \_\_\_\_\_

**9. Resettlement and/or Land Acquisition**

Will involuntary resettlement, involuntary land acquisition or loss of access to land be caused by sub project implementation?

Yes \_\_\_\_\_ No \_\_\_\_\_

**Do landowners and community members consent to offering minor tracts of land for subproject implementation (either for temporary or permanent acquisition).**

**10. Loss of Crops, Fruit Trees**

Will the sub project result in the permanent or temporary loss of crops, fruit trees ?

Yes \_\_\_\_\_ No \_\_\_\_\_

**11. Loss of physical infrastructure**

Will the subproject result in the permanent loss of infrastructure?

Yes \_\_\_\_\_ No \_\_\_\_\_

**12.Noise pollution during Construction and Operations**

Will the operating noise level exceed the allowable decibel level for that zone?

Yes \_\_\_\_\_ No \_\_\_\_\_

**13. Will the project have adverse impacts on Natural Habitats and not have acceptable mitigation measures according to OP 4.04 Natural Habitats?**

Yes \_\_\_\_\_ No \_\_\_\_\_

**14. Solid or Liquid Wastes.**

Will the sub-project generate solid or liquid wastes?

Yes \_\_\_\_\_ No \_\_\_\_\_

If "Yes", does the sub project include a plan for their adequate collection and disposal?

Yes \_\_\_\_\_ No \_\_\_\_\_

**15. Public Consultation Process:**

Briefly describe the sub project consultation process in terms of when consultations took place, where they took place, who participated and how the criteria used to select participants in this process, what were the contributions from the participants, was it recorded and were contributions from participants included in decision making. Use separate sheet if necessary and attach a consultation report.

**16.Broad Community Support**

**Is there broad community support for this project. Briefly describe how you make the assessment.**

**Yes                      No**

**17. Vulnerable Groups:** Were members of associations from the following vulnerable groups consulted?

W omen: Yes \_\_\_\_\_ No \_\_\_\_\_

Youth groups Yes \_\_\_\_\_ No \_\_\_\_\_

Other groups

( e.g. orphans, widows/widowers, the elderly, ) Yes \_\_\_\_\_ No \_\_\_\_\_

*If answer is Yes, provide names of groups consulted*

:

**18.** Will these groups ( in 16. above) have access to and benefit from this sub project.?

Yes \_\_\_\_\_ \_ No \_\_\_\_\_

*If answer is Yes, specify which groups and describe how they will benefit.*

## Appendix 3: Guidelines for Preparing and Implementing Public Consultation

The purpose of community involvement is not to find the 'right' answer from the community, but to engage the community in the sub project so that they can share ownership and to give them the opportunity to inform the design process. It will also give the community the comfort of knowing early on in the process the mechanism through which affected individuals/households will be treated. In developing a strategy for public involvement there are a number of key issues that must be considered:

- Ensure that community members were not coerced into attending the meeting, that they were given sufficient time to attend the meeting, and that the meeting participants are representative of the community.
- Define goals clearly
- Provide clear details on the project in a culturally-appropriate fashion.
- Explore whether or not there is broad community support for the project. If there is no broad community support the subproject will not be implemented.
- Secure commitment to effective implementation
- Plan consultation timing and phasing
- Provide adequate resources
- Be aware of site specific sensitivities
- Be aware of the historical context
- Recognize the interest of developers/operators
- Be prepared to hear different views.
- Be prepared to integrate views into project design.

**In planning for the process of a public involvement program, the following principals must be followed:**

- Identify all stakeholder groups. Who will be affected directly and indirectly? Who else might have an interest or feel that they are affected?
- Identify the key issues around which public involvement will be required (scoping). These key issues would include:
  - environmental and social issues or decisions at stake
  - key organizations and interested parties involved
  - local authorities and the agencies involved
  - size of the issue or importance of the decision
  - urgency and time frame
- Understand the decision making process
  - identification of parties making the decisions
  - where in the project cycle decisions are made
- Determine the necessary level of involvement. Meaningful public involvement
- takes place at three levels:
  - conveying information to the public

- listening to the opinions and preferences of the public
- involving the public in making decisions

The nature and size of the project, combined with both the nature and number of stakeholders and the status of national legislation, will largely define when, where, and at what level public involvement is required for an EA and the environmental management plan.

- Identify key points to be included in the public involvement process

Timely disclosure of information is key and it may be useful to develop systems to ensure that stakeholders receive information on time and in an accessible format. Whilst it is important that consultation take place before major decision points, the aim should be to facilitate consultation throughout the preparation and implementation phases. This implies that consultation will often be necessary as part of the research effort of the EA and in the development of mitigation measures during the analysis phase of the study.

- Select most effective involvement techniques to be used
- Define a communication methodology
- Develop a budget

## Appendix 4: Terms of Reference for the Environmental Specialist/Advisor

### Environment Specialist/Advisor (ES/EA)

#### Description

The Environment Advisor (EA) will report to the Project Coordinator (PC) of the Project Coordination Unit (PCU) located within the DAL in Port Moresby. S/he will work closely with the PC and also with the Project Managers of the PMUs in Kokopo (Cocoa Board) and Goroka (CIC). Travel to the project provinces is an integral part of duties.

#### Key tasks and responsibilities

The EA will ensure that all PPAP activities are implemented as per Government of PNG and World Bank safeguards policies as described in the ESMF. The EA will train all key PPAP staff to ensure that they have the capacity to implement the project as per the requirements of the ESMF. S/he will be responsible for quality control related to the application of the ESMF until the PC/PMs are fully trained to take over that responsibility. Specifically the EA will:

- Undertake field visits to the PPAP provinces to supervise environmental management of the components of the PPAP. This will also involve training of the appropriate personnel at the PMUs (PM, Component 2 Coordinator, and Transport Planner/Senior Engineer).
- Review the preliminary screening of infrastructure projects (under Component 3) and partnership proposals (under Component 2) carried out by the PMUs to confirm preparation and to review quality of sub project EMPs as per World Bank requirements and PNG regulations.
- Liaise with DEC on the ongoing discussion and approval of environmental management guidelines for Component 3 investments.
- Develop procedures and work flows for effective environmental management within the PPAP during the project duration in line with the ESMF, and monitor their effective implementation at all levels.
- Provide inputs to a revision of the standard specifications for road and bridge construction in order to ensure that existing practices take into account more fully environmental aspects.
- Report on any issue identified in implementing the provisions of the ESMF and provide recommendations to the PPAP management and PSC on how they could be addressed.

#### Duration

Six months over 3 years. PY1, 4 months, PY2, 2 months, PY3, 2 months.

#### Required qualifications

##### Essential:

- Tertiary Qualifications in a Natural Resources Field such as Environmental Science, Environmental Management, Forestry or Ecology.
- Practical experience in the best practice approach to environmental management and monitoring, minimum of 10 years work experience since graduation.
- Demonstrated ability to assess training needs and build capacity of counterparts.

- Demonstrated understanding of World Bank safeguards policies to be able to advise all staff and stakeholders involved in PPAP.
- Demonstrated knowledge of preparing, organizing and delivering environmental awareness programs at village and community level.
- Good communication and reporting skills, including a working knowledge of Microsoft Word and Excel.
- Experience and understanding of working in a developing country.

**Desirable:**

- Knowledge of the coffee and cocoa industries in Papua New Guinea, including its stakeholders, organisation and production methods.
- Knowledge of the pests and diseases and the integrated pest management plans that will be used in the PPAP.
- Knowledge of the key conservation/environment authorities/agencies in PNG.
- Ability to understand Geographic Information Systems and the corresponding interface as to the collection of data by GPS and the plotting resulting in a map using MapInfo.
- Other computer literacy, desktop publishing skills.
- Practical experience in water quality monitoring, including the interpretation of and evaluation of water quality data.

## Appendix 5: Beneficiaries' Participation Framework (BPF)

The Beneficiaries Participation Framework (BPF) is designed to ensure that beneficiaries have continued participation and involvement in all stages of the PPAP that may directly impact upon them. Activities that affect beneficiaries will follow a process whereby beneficiaries participate in decisions over implementation, management, and M&E of PPAP activities.

Given the demand driven nature of the project the BPF provides general guidelines based on the following principles:

1. Stakeholders<sup>2</sup> will be provided with information on key PPAP activities and processes in a format and manner which is accessible.
2. Stakeholders will be provided with opportunities to contribute ideas to sub-project design so that PPAP activity outcomes are relevant, effective, and sustainable.
3. Communities will be given the opportunity to consent to or refuse assistance or support through activities. Stakeholders will be able to terminate activities at any time in the sub-project cycle if necessary.
4. Communities will be assisted to carry out monitoring and evaluation of activities after they have been completed.
5. Partnerships between civil society organizations and community based organizations will be encouraged.

In addition, PPAP recognizes the roles that women and youth play in the agriculture sector and as core members of the community. As such, community participation should include representation from both women and youth. If necessary, given the nature of power relations at the household and community level, separate discussions and/or gender-specific activities can be conducted.

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<sup>2</sup> Stakeholders refers to smallholders, farmers groups, and/or communities in which they live.

<b>Participation Strategies: Preparation, Implementation and Management</b>	<b>Risks and Measures to Mitigate Risks and Ensure Benefits</b>
<p><b>Socialization:</b> Service Providers with skills in community development and smallholder farming will work alongside village extension workers to provide smallholders, farmer groups, civil society organizations, and community based organizations with appropriate information about PPAP activities, how they might be managed, and how they might be involved and benefit from them.</p> <p><b>Needs assessments:</b> Service providers will assist smallholders, farmer groups, civil society organizations, and community based organizations to identify needs and opportunities, strengths and weaknesses of their organizations. Service providers will assist farmer groups to examine what they can do for themselves, what external assistance might be required, the costs of that assistance, and how those costs may be met.</p>	<p><b>Low capacity of service providers:</b> Pre-qualification would ensure service providers with skills to work with communities are used in the project. Criteria for pre-qualification could include: size or outreach, history of outreach and access to women and women’s groups; history of successful activities, governance, membership and input, history or potential to enter into partnerships.</p> <p><b>Exclusion of women and youth:</b> Service providers may not have the requisite skills and gender balance to engage with female smallholders, female laborers, female community members or with the youth. Pre-selected service providers must have demonstrated experience reaching women and women’s groups and/or youth or have partnerships that enable them to reach women, women’s groups, and youth. Service providers must have sufficient women on staff to engage in outreach to communities. Women and youth organizations will be targeted for inclusion as service providers.</p> <p><b>Inaccessible information:</b> Dissemination materials will be accessible to the wide range of stakeholders, taking into account high levels of illiteracy in communities and specifically among women.</p>
<p><b>Implementation:</b> Public agreements between smallholders, farmer groups, civil society organizations, and community based organizations, and partners will be made before implementing activities with beneficiaries.</p> <p>Consultations with communities will be undertaken before implementing sub-projects in Component 3 (details included in the Compensation Policy Framework).</p>	<p><b>Lack of ownership:</b> Beneficiaries should have responsibilities in sub-project implementation and should contribute towards costs wherever possible (in-cash or in-kind).</p> <p><b>Disengagement of local leadership:</b> Local Level Governments are weak and in some instances not trusted by local residents. Inclusion of the Ward Councilors at the consultations will be necessary for their buy-in and to strengthen the relationship with the community.</p>
<b>Participation Strategies: Monitoring and Evaluation</b>	
Working in pairs or teams service	<b>Low capacity among industry bodies to</b>

providers will work alongside village extension workers to train smallholders, farmer groups, civil society organizations, and community based organizations in monitoring and evaluation for PPAP activities.

**undertake participatory M&E:** Provide sufficient capacity building to key bodies to ensure they can undertake participatory M&E Training and accreditation of extension workers against the National Standard for Community Development Worker Units associated with M&E. Ensure participatory M&E activities are appropriate and frequent enough to provide timely, responsive and adaptive activity changes where necessary.

**Exclusion of women and youth:** Service providers may not have the requisite skills and gender balance to engage with female smallholders, female laborers, female community members or with the youth. Pre-selected service providers must have demonstrated experience reaching women and women's groups and/or youth or have partnerships that enable them to reach women, women's groups, and youth. Service providers must have sufficient women on staff to engage in outreach to communities. Women and youth organizations will be targeted for inclusion as service providers.