

# Environment Assessment and Measures

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Environmental Assessment and Review Framework  
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## Papua New Guinea: Town Electrification Project

Prepared by PNG Power Ltd for Asian Development Bank

The environmental assessment and review framework is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

## ABBREVIATIONS

ADB	–	Asian Development Bank
AP	–	affected person/s
CEP	–	Contractor's Environmental Plan
DEC	–	Department of Environment and Conservation
DoL	–	Department of Lands
EA	–	Executing Agency
EARF	–	Environmental and Review Framework
EIA	–	Environmental Impact Assessment
EMP	–	Environmental Management Plan
EO	–	Environmental Officer
GoPNG	–	Government of Papua New Guinea
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
MFF	–	multi-tranche financing facility
NGO	–	nongovernment organization
NTU	–	Nephelometric Turbidity Unit
PE	–	Project Supervising Engineer
PM	–	Project Manager
PMU	–	Project Management Unit
PNG	–	Papua New Guinea
PPL	–	PNG Power Ltd
PPTA	–	project preparatory technical assistance
RP	–	Resettlement Plan
TEIP	–	Town Electrification Investment Program

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## I. INTRODUCTION

1. The purpose of the Environmental Assessment and Review Framework (EARF) is to provide a procedure for the further environmental assessment of any other sub-projects that may be identified during the subsequent tranches.

2. The Government of Papua New Guinea (GoPNG) has requested the Asian Development Bank (ADB) to provide a multi-tranche financing facility (MFF) Town Electrification Investment Program (TEIP). The MFF will be used to develop hydropower resources to reduce reliance on diesel generation. The Project Preparation Technical Assistance (PPTA) was carried out in early 2010. The Department of Petroleum and Energy (DPE) will be the executing agency (EA) for the Project, while the PNG Power Ltd (PPL) will be the implementing agency (IA). A Project Management Unit (PMU) will be established within PPL, a wholly government owned corporation.

3. The Project will support the development of reliable and sustainable power supply to provincial centres to assist economic growth and increase access to electricity. The MFF will consist of two tranches. Tranche 1 will include sub-projects in three provincial centres located at (i) Popondetta, Oro Province, (ii) Kimbe, West New Britain and (v) Buka in the Autonomous Region of Bougainville were identified. This EARF will apply to all subprojects under the MFF so as to ensure that the environmental impacts are appropriately addressed and mitigated to acceptable levels.

## II. ASSESSMENT OF LEGAL FRAMEWORK AND INSTITUTIONAL CAPACITY

4. Environmental assessment of future sub-projects will comply with ADB and Government policies, legislation, and requirements. The relevant policies and legislation is shown in the following section.

### A. ADB Policies

5. Environmental Assessment will need to be carried out to ensure that potential adverse environmental impacts are addressed according to the *Asian Development Bank Safeguard Policy Statement, June 2009*. Herein after referred to as the "Safeguard Policy Statement".

6. The Safeguard Policy Statement consists of three policy components: (i) Environment Safeguards, (ii) Involuntary Resettlement Safeguards, and (iii) Indigenous People Safeguards. The objectives of Environment Safeguards are to ensure the environment soundness and sustainability of projects and to support the integration of environmental considerations into the project decision-making process. To help achieve the desired outcomes, ADB adopts a set of specific safeguard requirements that need to be achieved during the processing and implementation of projects financed by ADB. The environmental safeguard principles are stated in the Safeguard Policy Statement, 2009, it will guide environmental assessment process of projects. The Safeguard Policy Statement establishes the format for the presentation of the environmental assessment.

### B. PNG Requirements

7. Environmental impact assessment and management in PNG is provided for under the Environment Act of 2000 and its accompanying regulatory instruments including the Environment (Prescribed Activities) Regulation, 2002, and the Guideline for Conduct of

Environmental Impact Assessment and Preparation of an Environmental Impact Statement, 2004. The Act and regulations are administered by the Department of Environment and Conservation (DEC). Amendment of Environmental Act 2000 is currently under consideration.

8. The Environment Act caters for the sustainable management of the biological and physical components of the land, air and water resources of the country. Other related legislation administered by DEC includes; the Fauna (Protection and Control) Act (1966) the Conservation Areas Act (1978), the International (Fauna and Flora) Trade Act (1978), the Crocodile Trade (Protection) Act (1978) and the National Parks Act (1984).

9. The Environment (Prescribed Activities) Regulation 2002 categorizes projects as "Prescribed Activities" in two schedules according to the anticipated potential environmental impact. Schedule 1 consists of Level 2 activities that are subdivided into two categories (Category A and B). Category B has 13 sub-categories with sub-category 10 addressing Energy Production. Item 10.1 in this sub-category includes *Operation of hydroelectric plants with a capacity of more than 2 MW*. Projects that have more adverse environmental impact are designated in Schedule 2 as Level 3 Activities and only apply to major hydropower schemes with reservoirs inundating an area greater than 5km<sup>2</sup>. All hydropower projects that meet any of these requirements are required to prepare a Notification of Preparatory Works which is submitted to the Department of Environment and Conservation (DEC) who review the Notification and then advise the level of investigation required<sup>1</sup>. If the subproject is classified as 2B then an Environmental Application is completed and sent to DEC for review. If it is approved DEC issue an Environmental Permit which allows work to commence on the site.

10. Current pollution standards that will be applicable to the project relate to drinking water quality and aquatic life protection. The drinking water quality standards for raw (untreated) water are contained in the Public Health Drinking Water Quality Standards of 1984 while the standards for aquatic life protection are listed in the Environment (Water Quality Criteria) Regulation 2002 and are shown in Table 1 of Act. Sec. 133(2); Reg. Sec. 2. Ranges of criteria are given for several parameters including turbidity which shows that turbidity should not exceed 25 NTU.<sup>2</sup>

11. The Department of Environment and Conservation is responsible for the administration and enforcement of the Environment Act 2000 and its regulations. The department consists of three divisions: Environment Protection which is responsible for environmental approvals, Sustainable Environment Management and Policy Coordination and Evaluation. The current organisation structure consists of about 200 positions and about 170 are currently occupied.

12. The DEC has also issued several guidelines including Guideline for Submission of an Application for an Environmental Permit to Discharge Waste. *GL-Env/03/2004*. These include:

- (i) Noise discharges. IB-ENV/03/2004
- (ii) Air discharges. IB-ENV/02/2004
- (iii) Water and Land Discharges. IB-ENV/04/2004

<sup>1</sup> During the PPTA, DEC advised PPL that the Notifications that had been prepared for the TEIP sub-projects were assessed as a level 2B activity requiring PPL to submit an Environmental Application which is similar to the ADB IEE.

<sup>2</sup> This standard is close to clean water, whereas many of the water courses in PNG are naturally already quite turbid. It is suggested that this be clarified with DEC on the basis that the actual pre-project turbidity in the water course be used as the standard for assessing turbidity during construction.

13. DEC operates at the national level from its office based in Port Moresby. It does not have offices and personnel in the provinces. As part of the national government's decentralisation policy, DEC has to work in close consultation with the various provincial governments through the respective provincial administrations to ensure implementation of environmental legislation at the provincial level. Certain environmental management and monitoring functions are delegated to provincial administrations if and when they have the resources and capacity to conduct these activities. The level of delegation of authority varies among the provinces under this MFF.

### **C. Other PNG Legislation**

14. The following legislation will also apply to the TEIP subprojects:
- (i) The Forestry Act, 1991. The main objective of the Forestry Act is to manage, develop and protect the Nation's forest resources and environment in such a way as to conserve and renew them as an asset for succeeding generations.
  - (ii) The Employment Act, 1978. An act relating to the employment of nationals and non-citizens. The act covers recruitment, conditions of employment as well as health and safety aspects.
  - (iii) The National Cultural Property (Preservation) Act 1965. An Act relating to the preservation and protection of objects of cultural or historical importance to PNG.
  - (iv) In addition, road development, felling of trees, waste disposal, etc should abide by the *PNG Logging Code of Practice* and the *Department of Works and Supply Roads and Bridges Design Specification*.

### **D. International Agreements**

15. Papua New Guinea is a signatory to the following international agreements with environmental and conservation implications:
- International Plant Protection Convention, Rome 1951.
  - International Convention for the Prevention of Pollution of the Sea by Oil, London 1954.
  - Plant Protection Agreement for the South East Asia and Pacific Region, Rome 1956.
  - International Convention on Civil Liability for Oil Pollution Damage, Brussels 1969.
  - International Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter, London, Mexico City, Moscow 1972.
  - International Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington 1973 (CITES Treaty).
  - International Convention on the Conservation of Nature in the South Pacific, Apia 1976.
  - International Convention on the Prohibition of Military or any other Hostile Use of Environmental Modification Techniques, New York 1976.
  - United Nations Convention on the Law of the Sea, Montego Bay 1982.
  - International Convention for the Protection of the Natural Resources and Environment of the South Pacific, 1986 (SPREP Convention).
  - International Convention on Biological Diversity, Rio de Janeiro 1992.

## E. Borrower's Institutional Capacity

16. Under PPL organization, there is one person assigned as Environment Officer (EO) who is responsible on matters related to environmental management of projects. This person reports to Civil Maintenance which is under Manager Maintenance & Planning. This person has been fully committed with looking after environmental requirements of various projects implemented by PPL. On the social aspects, a Land & Community Relation Officer is responsible on social related issues and community development in PPL projects (particularly in two community development programs at ongoing major hydropower projects: SIDCO – Sirenemo and AVDA – Yonki). During implementation of Tranche 1, a Project Management Unit (PMU) will be formed which will include specialists in environment and social aspects. These specialists will focus their work on projects implemented under the TEIP.

### III. ANTICIPATED ENVIRONMENTAL IMPACTS

17. Run-of-river hydropower and transmission projects of the size proposed under the TEIP have limited adverse impacts, normally covering the following aspects:

- blocking of the watercourse by the weir which affects fish movement. This can be particularly having adverse impacts if migratory fish are found in the water course.
- partial dewatering of the watercourse between the intake and the powerhouse by the diversion of part of the flow to the powerhouse. This will reduce aquatic habitats in the partially dewatered section and during periods of very low flows.
- For sub-projects located within secondary forested areas (including main facilities and the transmission lines), clearance will reduce forest areas and reduce wildlife habitat.
- Increase turbidity of rivers during construction work in and alongside the stream channel for the weir foundations, establishing the intake and the initial section of the supply pipeline.
- The use of coconut oil will have beneficial environmental impacts because it has less emissions and toxic fumes than petroleum diesel fuel.
- Other issues or impacts will be related to land acquisition, cultural sites, biodiversity impacts, and invasive species.

18. **Blocking of water courses.** Aquatic surveys will be carried out for each hydropower subproject. Fish studies that were carried out at Tranche 1 sites showed that none of the fish is migratory species (have particular migratory requirements as part of their life cycle). If migratory species are identified, appropriate mitigation measures, such as fish ladders, will be incorporated into subproject design.

19. **Partial dewatering of the water courses.** Hydrological data will be used to evaluate the extent of the diversion on the available mean monthly flows and instantaneous minimum flows. Environmental flow requirements will be assessed based on site specific aquatic flora and fauna requirements and included in subproject design.

20. **Clearing requirements.** Where the sub-project will be constructed within forested areas the area to be cleared will need to be assessed in terms of forest significance. Where significant forest is encountered alternatives to the location will need to be evaluated. This applies to the intake, supply pipeline, powerhouse and access roads.

21. **Work in the stream channel.** During construction the weir may be built in two sections each extending halfway across the channel. The area being worked on will be protected by a temporary coffer dam which will remain in place to allow the weir foundations to be excavated and the weir constructed. During this time the channel will be disturbed and turbidity may be increased. Turbidity is unlikely to be an issue where soils are young or are derived from coralline sediments as these will mainly contain coarse particles. Where weathered soils occur these will provide a ready source of mobile clay materials. Any increase in turbidity is not expected to have any serious effect on aquatic life as it has already adapted to a wide range of natural turbidity from flood events. Any increase in turbidity will be short lived and will occur while the weir foundations and the intake are constructed and the start of the pipeline is excavated. The contractor will be required to ensure that coffer dams are placed around work areas and that work is undertaken to avoid exacerbating turbidity above DEC turbidity standard. During pipeline excavation the contractor will be required to ensure that excavated material is not allowed to fall back into the water course. It will be the responsibility of the contractor to avoid any actions that will seriously increase turbidity above acceptable levels.

22. **Cultural Sites.** When a cultural site is found during construction, this site will require further assessment to verify their authenticity and to determine whether it is possible or not to gain access to the use of the sites for subproject component or if not the component will need to be moved. All future sub-projects will need to be assessed for the presence of cultural sites.

23. **Rare and endangered flora and fauna:** PNG has vast natural biological resources and these may be affected by habitat reduction caused by clearing forested areas. Forested areas which provide extensive habitats for many of PNGs wildlife many of which are listed species by the Fauna Control Act of 1976 and within the IUCN Red List. All of the species that are listed are still common in many forest areas in PNG, and are hunted as wild meat as sources of protein. Hunting by contractors will be forbidden.

24. **Invasive alien species:** Invasive or introduced species are species that are non-indigenous and can colonise and out compete local species. Biological impacts from introduced species and invasive species can cause a great deal of damage to naturally adapted systems. Most of these species are a major threat to freshwater ecosystems of Papua New Guinea. Aquatic plants such as *Salvinia* (*Salvinia molesta*) and Water Hyacinth (*Eichhornia crassipes*) have been reported to cause major problems in Sepik river and other major rivers. Introduced species such as Tilapia and Mosquito fish are two examples that threaten natural freshwater fauna in the country. Neither of these aquatic plants were observed in the sub-project sites. Precautions will be made for the subprojects to prevent the spread of these invasive species.

#### IV. ENVIRONMENTAL ASSESSMENT FOR SUB-PROJECTS

##### A. Screening and Classification

25. The Safeguard Policy Statement establishes screening and categorisation of projects and determines the level of study required. The significance of project's environmental impacts and risks determines the environmental categorisation of the project. During the PPTA all sub-projects under tranche 1 were classified as a Category "B" which requires an IEE to be completed. Environmental categorization of the subsequent tranches will be assessed during processing of tranche 2 in 2004 and determined its categorization depending on the significance of environmental impacts. Should there be significant environmental impacts and risks then the subsequent tranche(s) will be classified as Category "A" and require an EIA to be completed.

26. During project preparation and selecting subprojects, Policy Principles 8 (Environment) as specified in the Safeguard Policy Statement, 2009 will be used for the first level of screening. The Policy Principle 8 specifies: Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

27. Sub-projects will also need to be submitted to DEC for approval under the Government system which will require a Notification of Preparatory Works to be submitted to DEC after which DEC screen the subproject and confirm the Activity Level.

## **B. Preparation of Environmental Assessments and Environmental Management Plans**

### **1. ADB Requirements**

28. For the ADB environmental assessment the preparation of the assessment and environmental management plan for tranche 2 in 2004 is to follow the report structure outlined in Annex to Appendix 1 of the *Asian Development Bank Safeguard Policy Statement, June 2009*.

#### **1.1 Department of Environment and Conservation (DEC)**

29. Environmental assessment in PNG is regulated by the Environment Act of 2000, the Environment (Proscribed Activities) Regulation, 2002, and the Guideline for Conduct of Environmental Impact Assessment and Preparation of an Environmental Impact Statement, 2004.

30. Following the submittal of the Notification of Preparatory Works to the DEC, DEC screen the subproject and confirm the Activity Level which based on the other subprojects assessed by DEC is likely to be a "2B" level which requires an environmental assessment to be carried out but at a lower level than an EIA.

31. PPL then prepares the Application for an Environmental Permit for approval by DEC who after approval issue an Environmental Permit. No construction work can commence until the Environmental Permit is obtained. The Application for an Environmental Permit has the following sections.

- Introduction
- Purpose of the Project
- Viability of the Project
- Development Timetable
- Site Selection
- Baseline Environmental Information/Data
- Bio-physical Environment
- Biological Environment
- Description of the Project
- Potential Impacts of the Project

- Waste Minimisation and Cleaner Production
- Confidential Information
- References

## **V. CONSULTATION INFORMATION DISCLOSURE, AND GRIEVANCE REDRESS MECHANISM**

### **A. Consultation**

32. For any subproject subject to the EARF and where an IEE is required, formal and documented public consultation and information disclosure will be required in accordance with the ADB and government's consultation and information disclosure requirements. This will be done at an early stage during IEE preparation and is to inform stakeholders of the project components and to encourage input to identify possibly overlooked environmental issues. The information disclosed and feedback provided at the consultation sessions will be summarized, attendance recorded, and the document attached as an annex to the IEE. Invited attendees at IEE consultations will include government agencies and district authorities, community representatives, as well as NGOs. At least 2 weeks notice of consultation meetings will be given.

### **B. Grievance Redress Mechanism**

33. The following process is to be used and commences with an attempt to sort out the problem directly at sub-project level. If this cannot be resolved then the grievance moves to the resolution process outlined in Section 87 of the PNG's Environment Act 2000. The process is also shown as a flow chart in Figure 1.

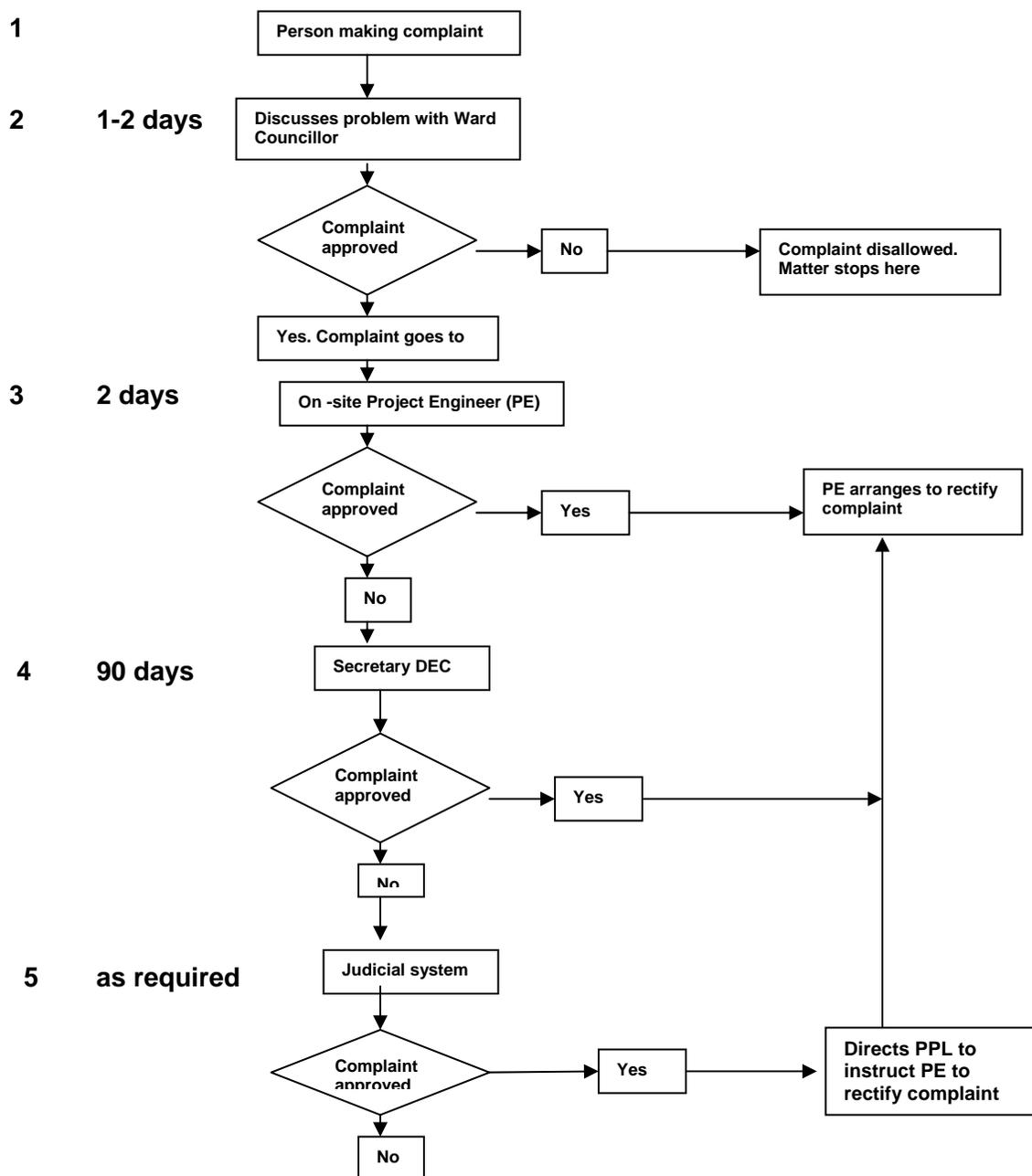
#### **1. During construction:**

- i. Most complaints arising during construction are expected to be minor complaints concerning dust or noise that should be able to be resolved quite easily and acted upon immediately at the sub-project level by the Project Engineer (PE). Where the complaint is of a more serious nature the PE will have up to two days to resolve the complaint.
- ii. Affected people (AP) are in the first place to discuss their complaint directly with the Ward Councillor in their village. If the Ward Councillor supports the complaint both persons take the complaint to the on-site PE who will review the complaint within 2 days. All complaints arriving at the Site Office are to be entered in a Register that is kept at site by; date, name, contact address and reason for the complaint. A duplicate copy of the entry is given to the AP for their record at the time of registering the complaint. The Register will show who has been directed to deal with the complaint and the date when this was made together with the date when the AP was informed of the decision and how the decision was conveyed to the AP. The Register is then signed off by the person who is responsible for the decision and dated. The Register is to be kept at the front desk of the Site Office and is a public document. The duplicate copy given to the AP will also show the procedure that will be followed in assessing the complaint, together with a statement affirming the rights of the AP to make a complaint. For anybody making a complaint no costs will be charged to the AP.
- iii. The (PE) will consider the complaint and within a maximum of two days will convey a decision to the AP. The AP and the Ward Councillor may if so desired discuss the complaint directly with the PE or his representative. If the complaint

of the AP is dismissed the AP will be informed of their rights in taking it to the next step. A copy of the decision is to be sent to the PM at the PMU.

- iv. Should the AP not be satisfied, the AP may take the complaint to the Secretary in the Department of Environment and Conservation (DEC) and continue the grievance in accordance with Section 87 of the Environment Act 2000. *Procedure for dealing with compensation claims for environmental impacts*. The procedure is shown in the following steps.
- v. Affected party (AP) meets with Environment Permit Holder (PH) to formally register concern over impact and seek redress. A copy of the alleged impact is submitted to Secretary of Environment and Conservation (SDEC).
- vi. PH has to determine whether the impact has occurred due to its activities.
- vii. If PH accepts responsibility for the impact, it can negotiate a mutually acceptable settlement with AP within 90 days.
- viii. If PH rejects responsibility for the impact, AP can request DEC to carry out a verification investigation.
- ix. If SDEC confirms that the impact has occurred, he/she will advise the PH and AP to negotiate a settlement within 90 days.
- x. If a negotiated settlement is not reached under either Step 3 or 5, the PH or AP can request SDEC to formulate a determination. Once this request is made, SDEC will have 90 days to reach a determination.
- xi. If either party is dissatisfied with the determination, it can appeal to the National Court.
- xii. The Secretary will have four weeks to consider the complaint. The Secretary will arrange for any complaint to be dealt with under the same procedure i.e. there will be no charge made to the AP for making a complaint.
- xiii. Should the AP not be satisfied with the ruling of the Secretary of the DEC, the AP may at their discretion take the grievance to the PNG judicial system. This will be at the APs cost but if the court shows that the Secretary, or the administration have been negligent in making their determination the AP will be able to seek costs.

**Figure 1: Flow Chart Outlining Grievance Review Mechanism**



## VI. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

34. The ADB will:
- Advise borrower about ADB's SPS requirements;
  - Screen and determine environmental categorization of subprojects, including the environmental assessment requirements;
  - Review and clear environmental assessment reports as a basis for subproject and tranche approval.
  - ADB will disclose on ADB's website: a draft full EIA 120 days prior to ADB Board consideration, and/or environmental assessment review frameworks before

- project appraisal; the final IEEs/EIA, new or updated EIA/IEE and corrective action plan prepared during project implementation, and environmental monitoring reports;
- (v) Review all statutory environmental clearance granted by DEC (particularly the conditions of the Environment Permit) and note all conditions in approving the subprojects;
  - (vi) Review EMP implementation and take actions (as necessary) in close consultation with DEC;
  - (vii) Monitor the EMP implementation and conduct due diligence as part of MFF review (missions).
  - (viii) Provide assistance to PPL, if required, in carrying out its responsibilities and for building capacity for safeguard compliance.
  - (ix) Ensure that PPL will conduct the required consultations with project affected groups and local NGOs in project area, and that PPL as project sponsor disclose relevant environment information on the project's environmental issues in an appropriate form, manner, and language(s) accessible to those being consulted. Such information disclosure with affected people will be guided by the ADB's Public Communications Policy (2005).
35. The DEC will undertake the following:
- (i) Review the Notification of Preparatory Works and advise PPL of the Activity Level.
  - (ii) Review the Application for an Environmental Permit.
  - (iii) Following approval of the Application issue the Environmental Permit.
  - (iv) Undertake review of any subproject as required.
  - (v) Undertake to review environmental grievances.
36. The Department of Lands (DoL) will be responsible for:
- (i) Completion of all assessments on land required by subprojects under the MFF and paying compensation for loss of land and privately owned assets according to the RP.
  - (ii) The DoL will complete all of these activities in a timely fashion so that the subproject is not delayed. Following the completion of these activities the DoL will advise PPL that all land acquisition and compensation activities have been completed and that PPL may now takeover the site.
  - (iii) The DoL will monitor land owner reactions and act quickly to resolve any problems that may arise and jeopardise the subproject.
37. PNG Power's responsibilities include:
- (i) Formation of a Project Management Unit with the required staff which includes the following: (i) an Environmental Officer, (ii) a Land Acquisition Officer and (iii) a Community Development Officer. The social and environmental team will use the PMU facilities and be supplied with computer facilities, transport and specialised equipment including; a portable water quality meter, a noise meter, and digital cameras from the PMU budget. The PMU cost for international environmental management specialist (consultant) and a national staff, including travel and accommodation is \$220,000. The national staff will receive on-the-job training from the international consultant.
  - (ii) PPL will arrange for the following conditions to be attached to the Statement of Duties for the Project Manager and the Project Engineer.

- (i) *The Project Manager will be responsible for ensuring that the environmental safeguards are implemented so as to meet their intended requirements. This includes ensuring that the construction section and tendering conditions for the EMP is attached to the Bid and Contract documents.*
- (ii) *The Project Engineer (PE) will be responsible for supervising the implementation of the EMP during construction. The PE will be assisted by the Environmental Officer (EO) and the Environmental Specialist (ES). The PE will be responsible for conveying any instructions from the EO or the ES to the contractor.*
- (iii) The EO will prepare IEEs and Notification of Preparatory Works for other subprojects as required to meet the requirements of the MFF lending facility according to the requirements of the ADB and DEC.
- (iv) Ensure that information disclosure and consultation is done in accordance with the ADB's *Public Communications Policy* (2005) and Government requirements.
- (v) Undertake adequate consultations with affected people and arrange public disclosure of the IEE as necessary;
- (vi) The EO will arrange for a copy and the conditions of the Environmental Permit issued by DEC to be sent to the ADB.
- (vii) During pre-construction the EO will ensure that issues that need to be addressed by the PMU Design Engineers are considered in the design. The EO will prepare a Design Brief containing these requirements for action by the PMU technical design team.
- (viii) The EO will also review and revise the EMP as required and extract the construction section from the EMP and arrange for these are attached to the Bid and Contract Documents.
- (ix) The EO together with the CDO will arrange public consultation to advise affected communities of the scope and scheduling of the sub-project and to raise awareness within the communities of the likely phasing of events that will occur within their social boundaries.
- (x) During bid evaluation the EO will be a member of the Bid Evaluation Panel and will evaluate and rank the bidder's environmental statements and present these to the Bid Evaluation Panel.
- (xi) Following the award of the contract the EO will arrange for a letter to be sent to the contractor advising him that he has 14 days to prepare a Contractor's Environmental Plan (CEP).
- (xii) The EO will evaluate and approve the CEP.
- (xiii) Following approval of the CEP the EO will arrange to induct the contractor to the construction site confirm the details of the CEP with the contractor. When the EO considers that the contractor is competent to comply with the CEP the EO advises the PMU Project Supervising Engineer (PE) that the contractor may now commence work.
- (xiv) Ensure that contractors have access to the IEE report of subprojects;
- (xv) Ensure that the contractors understand their responsibilities to mitigate environmental problems associated with their construction activities;
- (xvi) The PE will be responsible for supervising the contractor's compliance with the CEP or EMP. The PE will be assisted by the EO in monitoring the work. All instructions to the contractor go via the PE.
- (xvii) The EO may issue Defect Notices concerning non-compliant work which are channelled to the contractor via the PE.

- (xviii) During operation, the EO will also undertake regular monitoring as required by the EMP.
- (xix) Should there be any change in scope of the subproject the EO is to advise the ADB and DEC of these changes.

38. The contractor's responsibilities include;
- (i) At the time of bidding the contractor is to sign a statement verifying that his company can (i) meet the environmental conditions of the construction section of the EMP, (ii) has costed the environmental work into the budget and (iii) nominates person/s on his staff who will be responsible for complying with the environmental requirements.
  - (ii) Prior to construction commencing the contractor will address the construction section of the EMP which will be attached to the Bid and Contract Documents and develop this into a detailed Contractor's Environmental Plan (CEP) that amplifies the conditions established in the EMP into a working document that can be used in the field situation. The CEP will also identify persons who will be responsible for undertaking the work within the contractor's team. It will include a basic monitoring plan and a reporting program.
  - (iii) The CEP will be submitted to the EO for approval. The EO will forward a copy to DEC for their information.
  - (iv) Following approval of the CEP the contractor is required to attend a site induction meeting where the CEP is further discussed directly with the contractor to ensure that all compliance conditions are clearly understood.
  - (v) Following the satisfactory completion of the induction the EO advises the PE that the contractor is now cleared to commence work.
  - (vi) The contractor's Site Engineer will be responsible for daily supervision of the CEP. The contractor is required to undertake work as directed by the PE who will be assisted by the EO. If the work is non-compliant with the CEP or EMP conditions the PE will instruct the contractor to rectify the work.
  - (vii) The contractor will prepare a quarterly compliance report that will be submitted to the PMU. The report will also contain the Monthly Accident Report.

## **VII. MONITORING AND REPORTING**

39. A monitoring program will be prepared and attached to each IEE as an Annex.
- (i) The EO will be responsible for reviewing the monitoring program to ensure that it meets the intention of the EMP and for carrying it out.
  - (ii) The EO will prepare a quarterly report to be attached to the subproject periodical report to the ADB. The report will outline where work has not complied with the EMP and what steps have been taken to rectify it
  - (iii) After one year the EO will arrange to review the monitoring program and make any adjustments to it as required. The EO will inform the ADB and DEC of any changes that are recommended to be made prior to implementing the changes.