PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF
SDR 27.4 MILLION
(US$43.0 MILLION EQUIVALENT)

TO THE

INDEPENDENT STATE OF PAPUA NEW GUINEA

FOR THE

ROADS MAINTENANCE AND REHABILITATION PROJECT II

APRIL 7, 2011

Timor-Leste, Papua New Guinea & the Pacific Islands
Sustainable Development Department
East Asia and Pacific Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective 2011)

Currency Unit = Kina (K)
K 1.0 = US$0.37
US$1.0 = K 2.7

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB     Asian Development Bank
AusAID  Australian Agency for International Development
AWP     Annual Works Program
BAMS    Bridge Asset Management System
CAS     Country Assistance Strategy
CSTB    Central Supply and Tenders Board
DA      Designated Account
DoW     Department of Works
EIRR    Economic Internal Rate of Return
EMP     Environmental Management Plan
EPM     Employer’s Project Manager
ESIMP   Environmental and Social Impact Management Plan
ESMF    Environmental and Social Management Framework
FM      Financial Management
GDP     Gross Domestic Product
GoPNG   Government of Papua New Guinea
HDM-IV  Highways Design and Maintenance Model, 4th Edition
IBRD    International Bank for Reconstruction and Development
IDA     International Development Association
IFR     Interim Financial Report
JICA    Japan International Cooperation Agency
LARF    Land Acquisition Resettlement Framework
LNG     Liquefied Natural Gas
M&E     Monitoring and Evaluation
MDGs    Millennium Development Goals
MoT     Ministry of Transport
NCDC    National Capital District Council
NRA     National Roads Authority
NTSP    National Transport Strategy Plan
PAD     Project Appraisal Document
PDO     Project Development Objectives
PEPM    Provincial Employer’s Project Manager
PNG  Papua New Guinea
PNGSDP Papua New Guinea Sustainable Development Program
RAMS Roads Asset Management System
RAP Resettlement Action Plan
RPF Resettlement Planning Framework
RMRP Roads Maintenance and Rehabilitation Project
TOR Terms of Reference

<table>
<thead>
<tr>
<th>Regional Vice President:</th>
<th>James W. Adams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Director:</td>
<td>Ferid Belhaj</td>
</tr>
<tr>
<td>Sector Director:</td>
<td>John A. Roome</td>
</tr>
<tr>
<td>Sector Manager:</td>
<td>Charles M. Feinstein</td>
</tr>
<tr>
<td>Task Team Leader:</td>
<td>Demetrios Papathanasiou</td>
</tr>
</tbody>
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INDEPENDENT STATE OF PAPUA NEW GUINEA

Road Maintenance and Rehabilitation Project II

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PAD DATA SHEET

INDEPENDENT STATE OF PAPUA NEW GUINEA

ROADS MAINTENANCE AND REHABILITATION PROJECT (RMRP) II

PROJECT APPRAISAL DOCUMENT

EAST ASIA AND THE PACIFIC

SUSTAINABLE DEVELOPMENT

Date: 7 April 2011
Country Director: Ferid Belhaj
Sector Director: John A. Roome
Sector Managers: Charles M. Feinstein
Team Leader: Demetrios Papathanasiou
Project ID: P119471
Lending Instrument: IL

Sector(s): Roads and Highways
Theme(s): Trade Facilitation and Market Access (80%), Rural Services and Infrastructure (20%)
EA Category: Category B

Project Financing Data:

Proposed terms:
IDA Standard Terms of total maturity of 35 years including a grace period of 10 years

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<tr>
<th>Source</th>
<th>Total Amount (US$M)</th>
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<td>Total Bank Financing:</td>
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<td>Recommitted</td>
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Borrower: Independent State of Papua New Guinea
Responsible Agency: Department of Works
Contact Person: Gariga Kuriki Gabi
Telephone No.: +675 324 1482
Fax No.: +675 324 1481
Email: gkgworld@datec.net.pg
### Estimated Disbursements (Bank FY/US$ m)

<table>
<thead>
<tr>
<th>FY</th>
<th>2012</th>
<th>2013</th>
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<td>34.0</td>
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**Project Implementation Period:** September 2011 – December 2015  
**Expected effectiveness date:** June 2011  
**Expected closing date:** July 31, 2016

<table>
<thead>
<tr>
<th>Does the project depart from the CAS in content or other significant respects?</th>
<th>○ Yes  x No</th>
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</table>

If yes, please explain:

| Does the project require any exceptions from Bank policies?  
Have these been approved/endorsed (as appropriate by Bank management)?  
Is approval for any policy exception sought from the Board? | ○ Yes  x No  
○ Yes  ○ No  
○ Yes  x No |
|---------------------------------------------------------------|-------------|

If yes, please explain:

<table>
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<tr>
<th>Does the project meet the Regional criteria for readiness for implementation?</th>
<th>x Yes  ○ No</th>
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If no, please explain:

### Project Development Objectives

The project development objectives are to: (i) improve road transport to project areas through providing satisfactory physical condition and safety in selected roads; and (ii) strengthen institutional arrangements for road maintenance including the participation of the private sector and communities.
Project Description

The Project consists of the following parts:

Part 1. Rehabilitation, Upgrade and/or Maintenance of Roads and Bridges

(i) Carrying out of rehabilitation and upgrade to seal of a section of the Hiritano Highway between Inawabui and Bereina Junction and access link to Bereina village.

(ii) Carrying out of upgrade to seal of the Hiritano Highway between Malalaua and Kerema, including routine maintenance of the Hiritano Highway between Malalaua and Kerema.

(iii) Carrying out of rehabilitation, upgrade and/or maintenance of selected road sections and bridges within ten coastal or island provinces (East and West New Britain, Manus, Oro, Morobe, Gulf, Central, Madang, Milne Bay and Western).

Part 2. Technical Assistance for Project Management, Design, Supervision and Capacity Building

(i) Project Management, including detailed design and supervision services

Retaining the Employers’ Project Manager to support: (a) overall coordination of Project activities and Project management; (b) financial management; (c) bid documentation and contract procurement; and (d) detailed design and supervision of roads and bridge works.

(ii) Capacity Building and Technical Assistance for Road Sector Support

Provision of technical assistance and training for: (a) strengthening of small and medium-sized contractors involved in road rehabilitation, upgrade and/or maintenance operations; (b) institutional strengthening of the NRA for ensuring that effective road maintenance is undertaken; and (c) carrying out monitoring and evaluation activities to improve the information of the Road Asset Management System and Bridge Asset Management System.

(iii) Project Management Support

Strengthening the capacity of DOW through the provision of advisory services, training and support for Project coordination, procurement, financial management, and supervision, including environmental and social safeguards.
### Safeguard policies triggered?

<table>
<thead>
<tr>
<th>Policy</th>
<th>Yes/No</th>
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<tr>
<td>Environmental Assessment (OP/BP 4.01)</td>
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<td>Natural Habitats (OP/BP 4.04)</td>
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<td>Forests (OP/BP 4.36)</td>
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<td>Pest Management (OP 4.09)</td>
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<td>Physical Cultural Resources (OP/BP 4.11)</td>
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<td>Safety of Dams (OP/BP 4.37)</td>
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<td>Projects on International Waters (OP/BP 7.50)</td>
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<td>Projects in Disputed Areas (OP/BP 7.60)</td>
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### Conditions and Legal Covenants:

<table>
<thead>
<tr>
<th>Financing Agreement Reference</th>
<th>Description of Condition/Covenant</th>
<th>Date Due</th>
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<tbody>
<tr>
<td>Sch. 2 I A 1</td>
<td>Establishment of Steering Committee</td>
<td>Within 12 months from effectiveness</td>
</tr>
<tr>
<td>Sch. 2 I A 2</td>
<td>Appointment of Project Manager</td>
<td>Within 2 months from effectiveness</td>
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I. Strategic Context

A. Country Context

1. Papua New Guinea (PNG) has enjoyed markedly improved economic fortunes since the mid-2000s. The global commodity price boom and stronger macroeconomic management underlie much of the reversal from the declining real incomes and macroeconomic volatility that characterized the second half of the 1990s and the early years of the 2000s.

2. The global downturn of 2009 had only a mild impact on PNG’s economy, which expanded by 5.5 percent, outperforming most other developing economies and its regional peers. This follows several years of 6 to 7 percent annual Gross Domestic Product (GDP) growth. Extractive industries underpin the country’s economy and therefore make it subject to volatile commodity prices. Sharply higher global commodity prices have strongly supported incomes (average export prices doubled between 2005 and 2008, and were still two-thirds higher in late 2010), but it is the non-minerals sector that led this resurgence, benefiting from private investment in, for instance, the newly liberalized telecommunications and aviation sectors. Economic growth has recently accelerated and became broader following the agreement reached in early 2010 for the development of the PNG Liquefied Natural Gas (LNG) project, which is estimated to invest approximately US$15 billion in the medium term (more than double the country’s GDP).

3. Stronger fiscal management has done much to transform windfall gains from higher commodity prices into sustained growth. The Fiscal Responsibility Act 2006 placed ‘excess’ government mineral receipts associated with the rise in global commodity prices into various trust funds and into paying down more expensive external loans and the government’s unfunded superannuation liabilities\(^1\). By 2010 gross public debt neared 25 percent of GDP, from about 70 percent in 2002. These accumulated surpluses funded a fiscal impulse of as much as 13 percent of GDP in 2009-10 to counter the growth slowdown – more than permitted under the medium term fiscal strategy but with a less-than-proportionate impact on growth.

4. PNG’s human development indicators have lagged the economy’s recovery and progress against the Millennium Development Goals (MDGs) has fallen short. PNG faces the key challenge of leveraging its good macroeconomic performance and extractive industry revenues to improve the living standards of its population, as human development indicators remain low\(^2\). A widely recognized major constraint to economic development and delivery of services is the country’s lack of good infrastructure facilities.

5. Lack of reliable road networks in PNG is compromising the country’s connectivity, disrupting not only access to basic social services (for instance, health and education

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\(^1\) The medium term fiscal strategy provides for ongoing spending to be in line with ‘normal revenues’, which are defined as non-mineral revenues plus ‘normal’ mineral revenues, which are up to the level expected without high commodity prices, estimated at 4 percent of GDP.

\(^2\) The Human Development Index for PNG ranks the country 148\(^{th}\) from 182 countries (source: Human Development Report – 2009).
facilities), but also hindering growth as the movement of goods and people across the country becomes either impossible, unsafe, or exceedingly costly, requiring alternative means such as air transport and difficult or dangerous sea crossings.

B. Sectoral and Institutional Context

6. Road transport infrastructure in PNG does not provide adequate nationwide (and even in some instances, inter-provincial) connections. Although roads have improved over the last decade due to the Government of PNG (GoPNG) efforts—with sustained assistance from the Australian Agency for International Development (AusAID), the Asian Development Bank (ADB), Japanese International Cooperation Agency (JICA), and the World Bank—less than 35 percent of national roads are considered to be in good condition, while thousands of kilometers of the network have not been maintained for years. Inadequate maintenance of roads assets has brought significant deterioration over time, rendering critical segments of the country’s national roads network impassable, particularly during and following the rainy season.

7. The condition of the country’s road infrastructure can be explained by the combination of: (i) PNG’s challenging physical environment and climatic conditions; (ii) scattered and dispersed settlement patterns resulting in long distances between population centers; (iii) long periods of funding constraints; (iv) weak institutional and management capacity; (v) reduced public sector capability to execute works; and (vi) the limited number of able local and international private contractors.

8. A decade of severe fiscal constraints starting in the mid-1990s brought sharp reductions of spending in road maintenance, resulting in severe deterioration in the condition of roads. The GoPNG has recognized the importance of adequate transport infrastructure in its strategic documents: *Papua New Guinea Vision 2050* (November 2009); *Papua New Guinea Development Strategic Plan 2010-2030* (March 2010); and *Medium Term Development Plan 2011-2015*, which call for significant investments to rehabilitate and adequately maintain the roads transport infrastructure in the country. The Government, through the Ministry of Transport (MoT), is currently finalizing its National Transport Strategy Plan (NTSP), which is expected to maintain a significant focus on improving the country’s roads networks.

9. Increased allocations for transport development from 2005, supported by development partners, have halted the decline and recently started to reverse the situation. The 2010 and 2011 budgets allocated significantly higher resources to transport rehabilitation and development compared to previous years, reflecting the improved overall fiscal situation of PNG and the Government’s recognition of transport as an important priority sector for economic development.

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3 PNG’s topography is typically characterized by coastal plains and steep mountainous terrain. Its geographical location with warm climate and heavy rainfalls concentrated in short time periods brings floods and landslides; aggressive plant growth, if not controlled, quickly compromises roads drainage and results in rapid surface deterioration.
10. The rationale for the Bank’s involvement in the roads sector is to continue its well-established support of the national transport strategy. The three GoPNG strategy documents referred to above incorporate a transport sector strategy that will generally prioritize medium- and long-term infrastructure development in a number of geographically defined ‘economic corridors’, and specifically on priority roads within those corridors. The objective of this strategy is to concentrate limited resources and investment in areas of greatest economic potential, thereby maximizing the opportunities for development and growth, nationally and regionally.

11. As the primary focus of the road and bridge works proposed for RMRP II will be on national roads located in these corridors, the project will clearly provide direct support to the current transport sector strategy, its objectives and outcomes.

12. The current Roads Maintenance and Rehabilitation Project (RMRP) was approved in 2002 (International Bank for Reconstruction and Development (IBRD) Loan US$40 m), received Additional Financing in 2007 (International Development Association (IDA) Credit US$37.31 m equivalent) and has provided valuable implementation experience with road transport in PNG. Although RMRP faced delays in its implementation, the original project disbursed fully and is now closed, while the Additional Financing project has now committed almost fully its available funds. Project implementation has been satisfactory, with GoPNG requesting further assistance for a follow-up project.

C. Higher Level Objectives to which the Project Contributes

13. The project contributes to the GoPNG’s objectives of expanding transport infrastructure services to support PNG’s long term sustained economic growth and improve connectivity among the country’s provinces to facilitate trade and access to markets. RMRP II was identified in the World Bank’s current Country Assistance Strategy (CAS) and would support its second pillar, which aims to improve livelihoods and services delivery by developing well-managed national and local transport services.

II. Project Development Objectives

A. PDO

14. The project development objectives are to: (i) improve road transport to project areas through providing satisfactory physical condition and safety of selected roads; and (ii) strengthen institutional arrangements for road maintenance including the participation of the private sector and communities.

1. Project Beneficiaries
15. RMRP II aims to follow on from the successful implementation of the current RMRP and works may be carried out in the following provinces: East and West New Britain, Manus, Oro, Morobe, Gulf, Central, Madang, Milne Bay and Western. Main beneficiaries of the project will be the local communities and businesses along the selected roads, transport sector providers, and local contractors. Interventions at the institutional level through technical assistance will contribute to benefits for the road sector as a whole.

2. PDO Level Results Indicators

16. Key performance indicators would be: (i) kilometers of roads rehabilitated; (ii) kilometers of roads maintained to good and fair condition; (iii) increase in number of road users on project roads; and (iv) increase in the number of private sector companies actively engaged in road works.

III. Project Description

A. Project components

17. Component 1 – (US $46.0 million): Rehabilitation, Upgrade and/or Maintenance of Roads and Bridges: This component will cover the physical implementation of works on sections of roads and bridges selected for rehabilitation, upgrading and/or maintenance under the project. There are two sub-components: the first comprises a number of sub-projects on the Hiritano Highway in Central and Gulf provinces that are already identified as priority projects. The second sub-component consists of funding for sub-projects that will be identified and selected through annual prioritization and planning, commencing after the first year of project implementation.

18. The following activities will be carried out under Component 1:

i) Rehabilitation & Upgrade to Seal a section of the Hiritano Highway between Inawabui and Bereina – US$6.7 million; and upgrade to Seal the Hiritano Highway between Malalaua and Kerema, including initial Routine Maintenance of the Hiritano Highway between Malalaua and Kerema – US$13.6 million. (Subtotal US$20.3 million). The Hiritano Highway, connecting the country’s capital Port Moresby and the capital of the Gulf region Kerema, is considered a high priority national road as it falls within an economic corridor identified by the GoPNG to support the medium and long term economic development plans of the Central and Gulf provinces. During the last few years, a number of investments have rehabilitated various sections of this highway and—with support from RMRP— it is expected that by November 2011 the previously impassable section of the highway in the Gulf province will be re-opened. Notwithstanding these improvements, a number of sections totalling approximately 80km remain unsealed, posing challenges for traffic flow and road maintenance. This sub-component will address the remaining unsealed sections to complete the sealing of the Hiritano Highway from Port Moresby to Kerema.

ii) Rehabilitation, Upgrade, and/or Maintenance of Selected National and National District Roads and Bridges – US$25.7 million. This sub-component will involve the
rehabilitation, upgrade and/or maintenance of selected road sections and bridges from within ten coastal or island provinces. Priorities for investments in specific roads will be outlined in the country’s National Transport Plan, while detailed planning will be carried out by the Department of Works (DoW) Asset Management Branch, the government agency responsible for operating the Roads and Bridge Asset Management Systems (RAMS & BAMS) databases, economic analysis, planning and prioritization tools.

19. **Component 2 – (US$7.0 million): Technical Assistance for Project Management, Design and Supervision Services, and Capacity Building:** Following the experience of RMRP the project will include a component for technical assistance to support project implementation and to strengthen the country’s capacity to manage and maintain effectively its road network.

20. The following activities will be carried out under Component 2:

   i) **Project Management, including detailed design and supervision services – US$5.0 million.** To support effective project implementation and mitigate risks related to institutional capacity for project management, a consultancy will be employed to act as the Employer’s Project Manager (EPM) and support: (a) overall coordination of project activities and project management; (b) financial management; (c) bid documentation and contract procurement; and (d) detailed design and supervision of road and bridge works.

   ii) **Capacity Building and Technical Assistance for Road Sector Support – US$1.0 million.** This sub-component will aim to strengthen the capacity to manage and maintain the road sector, following on from the work undertaken during the current RMRP. It will include consulting services and training for: (a) strengthening of small and medium-sized contractors for road rehabilitation, upgrade and/or maintenance operations, (b) institutional strengthening of the National Roads Authority (NRA) for ensuring effective road maintenance is undertaken, and (c) carrying out monitoring and evaluation activities to improve the information database on road usage.

   iii) **Incremental Operating Costs – US$1.0 million.** This sub-component will fund incremental operational costs incurred by DoW for the implementation of the project and may include (a) maintenance and operation of equipment and vehicles procured or used for the management of the project; (b) salaries paid to staff hired for the purposes of the project; (c) travel costs and per diems; (d) consumable office supplies; (e) communication, printing and publications; (f) bank charges; and (g) other miscellaneous costs.

21. The project, during its implementation period, will seek to mobilize trust-fund resources to promote gender-specific activities for road maintenance. Project consultations aiming to ensure that women’s concerns are appropriately taken into account in project design have taken place for projects identified for the first year and will continue for the programming of activities in following years. The project during its implementation will see to also identify specific opportunities for women in roads maintenance.

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5 The original eight RMRP provinces – East and West New Britain, Central, Gulf, Oro, Morobe, Manus, Western – with the possible addition of Madang and Milne Bay
22. Building on the experience with RMRP, during implementation the project is expected to co-finance specific project investments with the Papua New Guinea Sustainable Development Program (PNGSDP)\(^6\).

B. Project Financing

1. Lending Instrument

23. PNG is eligible for IDA funding and the GoPNG, in its efforts to further reduce its debt exposure, is not prepared to access IBRD resources at this time. Therefore, the project will be financed by an IDA Credit of SDR 27.4 million (US$43.0 million equivalent). Counterpart financing of about US$10.0 million will be provided for Component 1, while the PNGSDP may provide a portion of the GoPNG financing for the project, similarly to RMRP.

2. Project Cost and Financing

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Project cost (US$ Million)</th>
<th>IDA Financing</th>
<th>% of IDA Financing of total project cost</th>
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</thead>
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<tr>
<td>1. Rehabilitation, Upgrade and Maintenance of Roads and Bridges</td>
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<td>36.0</td>
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<tr>
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<tr>
<td>Total Financing Required</td>
<td>53.0</td>
<td>43.0</td>
<td>81</td>
</tr>
</tbody>
</table>

IV. Implementation

A. Institutional and Implementation Arrangements

24. The responsibility for rehabilitation and upgrade works for PNG’s roads network lies with DoW, which is the key implementing agency of RMRP and undertakes most of the activities in the sector supported by other development partners. On this basis, DoW will be the lead agency for the project overall, and particularly for works carried out on national roads and bridges. Roads that are in good condition or roads that are rehabilitated and/or upgraded to an acceptable standard may be transferred to the NRA, which then assumes responsibility for their maintenance. It is anticipated that this arrangement will continue for

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\(^6\) PNGSDP was established in 2002, to support selected Sustainable Development Programs through projects and initiatives to benefit PNG.
the duration of RMRP II. NRA will therefore be the agency that will be increasingly responsible for implementing routine maintenance on a growing number of sections of national and national district roads. RMRP II will not fund NRA directly, as the institution is relatively new and is only gradually increasing the length of roads for which it assumes responsibility, and NRA is expected to pursue a number of projects for which it has already accumulated unspent resources over the last few years.

25. For the proposed Component 2, which includes technical assistance for project management, detailed design and supervision, and various capacity building efforts, DoW will ensure that these tasks are carried out under the project. DoW will be the agency responsible to facilitate these activities by engaging necessary firms or individuals as required. As with the current satisfactory arrangements under RMRP, DoW will also acquire the services of an EPM. The EPM, in close collaboration with DoW, will be responsible for the following:

- Preparing annual work programs;
- Preparing project cash-flow requirements;
- Design and supervision of road rehabilitation and maintenance works;
- Making recommendations on the selection of specialist design and supervising engineers where required;
- Preparing bidding documents;
- Assisting with bid evaluation and recommendations for award of contracts;
- The timely execution of procurement and implementation of the project; and
- Supervising environmental clauses in the bid documents for civil works.

26. The EPM will also assist DoW in the administrative aspects of project supervision and monitoring, including critically reviewing the performance of contractors and consultants, implementing the financial control system for project-related expenditures, and ensuring that reports and project audits are submitted on a timely basis.

27. To ensure satisfactory project implementation on the ground, for both national and national district roads and bridges, a Provincial Employer’s Project Manager (PEPM) will be provided in provinces at the time that physical works are taking place. The PEPMs will report directly to the EPM, who in turn will report directly to the Project Manager, who is assigned by the Secretary of DoW.

28. Despite the large scope of management and implementation activities assigned to the EPM, overall responsibility for project implementation will still lie with DoW. In particular, the DoW, in consultation with the EPM and PEPMs, will identify priority works for inclusion in the annual investment program. Subsequently, DoW will review and approve the annual investment program and will submit an annual budget.

29. Finally, the project will benefit from a Steering Committee, which will include representatives from: (i) the Department of National Planning and Monitoring; (ii) the Department of Treasury; (iii) the NRA; (iv) the Department of Transport; and (v) will be chaired by the representative of the Department of Works. The Steering Committee will
provide general guidance and oversight of the project to ensure effective coordination among
the various agencies and alignment with the GoPNG strategic priorities.

B. Results Monitoring and Evaluation

30. For collection and analysis of all data relating to the PDO level indicators, the project will
utilize the resources of the Asset Management Branch within DoW - which currently collects
and analyses data on road use and condition - and NRA as applicable, with technical and
logistical support from the EPM as required to overcome capacity limitations in either
institution. The training / capacity building consultant will be responsible for collecting and
analyzing data relating to the sole specific intermediate results indicator (number of local
contractors trained).

31. Utilizing the monitoring data obtained, Progress Reports will be periodically compiled by
the EPM, in conjunction with DoW and NRA. The reports will cover the entire project\(^7\) and
be prepared quarterly, not later than 45 days after the end of each calendar quarter. The
reports will describe the physical progress of works during project implementation, both
cumulatively and for the period covered by each report, summarize procurement under the
project, expenditures under contracts financed out of the proceeds of the loan, estimated cost
of the project versus available funding, projection of financing needs by quarter for the next
six months, and explain variances between the actual and previously forecast implementation
targets.

32. The effect of the road and bridge improvements on the population served by the roads
involved will be assessed through baseline and follow-on socio-economic surveys to be
undertaken during the life of the project. Since lack of year-round accessibility is a major
constraint to social as well as economic integration and development, the broader positive
and negative impacts of improved access resulting from road maintenance and rehabilitation
on the livelihood and quality of life of the affected communities will be assessed. A specialist
consultant will be contracted to undertake and report on this activity.

33. The estimated incremental cost of Monitoring and Evaluation (M&E) activities will be
US$0.25 million, to be funded by the project. Details of the proposed M&E arrangements
and costs are provided in Annex 3.

C. Sustainability

34. A major risk associated with investment in road upgrading or rehabilitation in PNG is the
historic insufficiency of allocated funds in the GoPNG annual budget for maintenance of the
national and national district road networks. For newly completed roads, this shortage of
resources often results in inadequate, or complete lack of, routine and/or periodic
maintenance of the road carriageway and drainage. As a result this leads to rapid
deterioration of the new road, associated increases in travel times and vehicle operating costs,

\(^7\) Two of the four PDO level indicators (km of roads rehabilitated, and km of road maintained in good or fair
condition) will be monitored and evaluated in the national context as well as at project level.
and ultimately the temporary or permanent loss of access if the road surface and pavement suffer serious damage.

35. The GoPNG’s recent strategic documents, along with budgetary increases for maintenance and rehabilitation of roads and continuous engagement with other development partners, indicate the Government’s commitment to improving PNG’s transport sector and the roads in particular.

36. For RMRP II, as under RMRP, the risk will be significantly mitigated by handing over roads and bridges completed under the project to the NRA for sustainable maintenance through long-term, performance-based, outsourced maintenance contracts. Although the NRA is still in its infancy and is itself constrained by funding limitations, it is actively expanding its revenue base, which will enable it to take over and maintain an increasing length of national roads. According to a recent report⁸, GoPNG intends to: (i) increase the existing levy on diesel; (ii) add a similar levy on petrol; (iii) commence collection of road damage charges on heavy vehicles; (iv) institute a mechanism to transfer resources from the tax credit scheme to the road fund; and (v) explore other potential means of enhancing cost recovery in order to finance road maintenance.

37. It is expected that the first upgrading contracts under RMRP II will be completed and handed over to NRA in Year 2 of the project. Prior to this point, the project will work closely with the NRA to develop an appropriate mechanism for procuring and managing long-term performance-based maintenance contracts. Subsequently, the project will closely monitor the progress of the first contracts during the remaining two or three years of project implementation, to ensure that the maintenance program is being effectively implemented and will continue in a sustainable manner beyond the project closing date.

V. Key Risks and Mitigation Measures

A. Implementing Agency Assessment

38. Roles and responsibilities of DoW and NRA are well defined legally and there is common understanding about the scope of their activities. Nevertheless, because of chronic lack of adequate funding, both institutions have been facing difficulties in attracting and keeping quality staff. The capacity situation at regional and local offices is challenging and can cause project delays. Under the current RMRP, arrangements are in place for technical assistance through consultants that support financial management and preparation of procurement documentation. It is envisaged that similar arrangements will be followed under RMRP II.

B. Project Stakeholder Assessment

⁸ Papua New Guinea: Improving Road User Charges and Private Sector Participation in Road Development – ADB 2009
39. Road network improvements enjoy broad political support both at the regional and central government levels. Communities welcome the improvement of road access as it provides increasing access to markets, schools and health centers, as well as other benefits.

VI. Overall Risk Ratings

40. Country risks in PNG are related to political stability, volatile security conditions and the PNG LNG project absorbing most of the country’s contracting capacity, which could affect RMRP II. Security issues have typically occurred in provinces, which are outside the scope of RMRP II. Other important risks for the project include cost overruns and delays in the awarding and implementation of works contracts, because of weak capacity within the implementing agencies and outdated procurement clearance procedures within the GoPNG. To mitigate such risks –based on the experience of RMRP– a dedicated consultancy (the EPM) will be provided to assist implementing agencies with overall project management and specifically contract management, preparation of procurement documents and financial management.

41. Because the works will be limited to rehabilitation and maintenance of roads the environmental and social risks are well understood and can be managed well. Experience with RMRP has been satisfactory.

42. The overall proposed project risk is assessed based on the existing satisfactory RMRP, and is considered Medium-I (low probability, high impact). Longer-term risks to sustainable project results will depend on adequate funding for roads maintenance after the project’s closing date.

VII. Appraisal Summary

A. Economic and Financial Analysis

43. Under RMRP and with support from other development partners a RAMS has been established in DoW and is also supporting NRA. RAMS provides a comparative economic cost/benefit analysis using Highways Design and Maintenance Model, 4th Edition (HDM-IV) modelling to calculate an economic internal rate of return (EIRR), based on the following parameters:

**Costs:**

(i) Discounted cost of rehabilitating the length of section of road under consideration at current rates to restore the road and drainage to an acceptable design standard for all-weather trafficability (based on a detailed assessment of the existing road condition); and

(ii) Cost of routine and periodic maintenance over a 20 year period for gravel or sealed road as appropriate, sufficient to sustain the original standard.

**Benefits:**
(i) The product of reduction in economic transport costs of rehabilitated and maintained road compared to unmaintained road over a 20 year horizon (derived from vehicle operating costs due to surface roughness and transport times due to vehicle speed); and
(ii) The forecast traffic over the life of the road, based on recent or historic classified traffic counts and known or assumed traffic growth rates.

44. A threshold Economic Internal Rate of Return (EIRR) of 12 percent is used to qualify road sections for inclusion in the priority list of projects that are undertaken by DoW. Selected projects to be undertaken in the first 12-18 months have been analysed by RAMS and indicate an EIRR of higher than 17 percent, while an indicative analysis of investments for following years displayed an EIRR comfortably above the 12 percent threshold.

45. As expected, the EIRR calculations are sensitive to the anticipated demand for road transport, which is nevertheless expected to continue growing, as PNG develops. In addition, the costs of works are another important factor in determining EIRRs, but given on-going contracts in the country the DoW is estimating these with recent numbers, which are considered reliable.

46. The planning of works after the first year of project implementation will follow similar evaluation process by RAMS and will be informed through the Steering Committee regarding the overall PNG strategic planning, which will ensure the selection of economically viable and strategically important roads works.

B. Technical

47. The scope of construction work under RMRP II will be limited to minor earthworks, pavement layer works, bituminous surfacing and drainage works along existing road alignments and generally within the existing road formation width. Bridge construction will also be limited to upgrading or replacing existing river crossings. The design of all road and bridge works will be based on the conventional use of traditional road- and bridge-making materials and construction methods. No innovative and/or untested materials or methods will be utilized.

48. The rationale for the above approach is to provide the most appropriate technical solution to best suit the range of skills and experience available in PNG, relating to design and construction under the project and future maintenance activities. All technical designs will be required to be executed in accordance with the PNG national design parameters, standards and specifications applicable to national roads and bridges, which are in line with recognized international design standards.

C. Financial Management

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9 Budget, equipment and capacity constraints limit DoW’s ability to carry out bi-annual counts at the 191 strategic survey locations covering the entire national road network. Where current data is unavailable, historic or proxy data is used in the analysis.
49. The project proceeds, including oversight of the Designated Account, will be managed by the DoW with assistance from the EPM. A financial management capacity assessment has been conducted by the Bank based on the financial management arrangements of the existing RMRP, and specific actions to strengthen the new project’s financial management capacity have been agreed with the implementing agency. The FM assessment has concluded that with the implementation of these proposed actions, the financial management arrangements will satisfy the Bank’s minimum requirements under OP/BP 10.02. Annex 3 provides additional information on financial management.

D. Procurement

50. A procurement risk assessment of the Department of Works (DoW) has concluded that the same procurement and contract management arrangements as for the first RMRP should be followed. DoW has limited capacity and expertise to handle procurement, and the project will be competing with other major development projects (for example, the PNG LNG project) for works contracting. DoW will hire a firm to provide project management services, which will include the preparation of all procurement-related documents as well as technical assistance for contract management and supervision.

51. The procurement plan will be packaged in such a way as to ensure there is sufficient competition among local contractors for areas which would not attract foreign contractors, and upfront bunching of contracts will be avoided. A brief summary of the assessment, risk mitigation measures, and project procurement arrangements are provided in Annex 3.

E. Social (including safeguards)

52. The project is expected to have significant positive impacts for communities at project areas. Ongoing social assessments under RMRP show that road rehabilitation is linked to a rise in income for households, particularly as it expands access to markets. Improved roads may also help to cut transportation times to health facilities and schools (particularly for people living near the road). These trends are expected to continue under RMRP II. Project stakeholders include existing road users (drivers or passengers and/or non-motorized transport users), households living alongside the road, passengers and cargo goods, roadside sellers, formal or informal markets and traders. Users of social services such as health and education will also benefit from the project. A smaller risk of adverse impacts, such as accidents due to higher speeds, remains. The project is designed to minimize social risks by rehabilitating the existing roads within the right-of-way and within the formation width, with adequate provisions for traffic signs, speed bumps, etc. This was confirmed during public consultations which have recently taken place and will continue to take place during project implementation.

53. The project triggers OP 4.12 on Involuntary Resettlement due to the potential for small land acquisition or land impacts during the rehabilitation of the road. During RMRP a Resettlement Planning Framework (RPF) was prepared, but it was never used due to the lack of land acquisition under the project. A new Land Acquisition and Resettlement Framework (LARF) based on the existing one has been prepared. This revised LARF will be able to deal
with any land or livelihood impacts that arise. Public consultations were held in early 2011 at seven sites along the Hiritano Highway to consult stakeholders of the project and disclose the LARF. The LARF is available in English and Tok Pisin. Similar arrangements, including consultations and preparations of resettlement plans or frameworks will take place once the subprojects have been confirmed in later years. DoW will be responsible for implementing any necessary land acquisition, in consultation with the Lands Office, and will monitor that any necessary payments are completed.

54. The project also triggers OP 4.10 on Indigenous People (IP) as most of the communities in the provinces the project is targeting fulfil the characteristics of indigenous peoples as per paragraph 4 of OP 4.10. As a result, the Borrower will not prepare a separate Indigenous Peoples Plan/Indigenous Peoples Policy Framework, but the following aspects of an IP Plan have been integrated in the design and preparation of the project (See Annex 3 for details): (a) free, prior and informed consultation leading to broad community support was conducted during project preparation; (b) a framework for free, prior and informed consultation will be put in place during project implementation; (c) measures to ensure culturally-appropriate benefits are included in the project; (d) measures to ensure that adverse impacts are mitigated, including an appropriate grievance system, will be in place, and (e) measures for disclosing key project documents are in place. Given that ongoing social assessments have been carried out throughout the project provinces under RMRP, including a social assessment along the Hiritano Highway undertaken in 2010, a new social assessment will not be carried out for this project. By and large, the arrangements that were put in place to address IP issues effectively under the RMRP, which have been found to be suitable, will be implemented under RMRP II.

F. Environment (including safeguards)

55. The project is classified as Category B under OP 4.01 Environmental Assessment. The environmental impacts of roads reconstruction in PNG are predictable and are effectively mitigated through proper design and implementation of the environmental safeguards instruments.

56. The project involves the rehabilitation and maintenance of existing roads, keeping within the set road width and right of way. Typical construction related impacts are increases in dust, noise, traffic disruption and debris disposal. Development and use of borrow pits and quarry sites used as source of road construction material are also to be expected. Other impacts relate to the establishment of temporary construction camps, such as sanitation and solid waste management.

57. An Environmental and Social Impact Management Plan (ESIMP) was prepared in 2001 for the original RMRP. An updated Environmental Management Plan (EMP) based on the ESIMP has been prepared for the road package in the first year of implementation of the RMRP II (on the Hiritano Highway). Public consultations have also been carried out for the project to be done in the first year. An Environmental and Social Management Framework (ESMF) has also been prepared to cover the safeguards requirements of projects to be identified after the first year of implementation of the RMRP II. The EMP, ESMF, and
minutes of Public Consultations required for project implementation have been satisfied and disclosed. The compliance by the Contractors to the safeguards instruments will be monitored and supervised by the EPM and the Provincial Employer’s Project Managers (PEPM). The DoW Environmental Unit will provide oversight and guidance.

<table>
<thead>
<tr>
<th>Safeguard Policies Triggered by the Project</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Assessment (OP/BP 4.01)</td>
<td>[x]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Natural Habitats (OP/BP 4.04)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Pest Management (OP/BP) 4.09</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Cultural Property (OP 4.11)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Involuntary Resettlement (OP/BP 4.12)</td>
<td>[x]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Indigenous People (OP/BP 4.10)</td>
<td>[x]</td>
<td>[ ]</td>
</tr>
<tr>
<td>Forests (OP/BP 4.36)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Safety of Dams (OP/BP 4.37)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Projects in Disputed Areas (OP/BP 7.60)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
<tr>
<td>Projects in International Waterways (OP/BP 7.50)</td>
<td>[ ]</td>
<td>[x]</td>
</tr>
</tbody>
</table>

G. Other Safeguards Policies triggered

58. No other safeguards policies are triggered other than those mentioned above.
Annex 1: Results Framework and Monitoring

Results Framework

Project Development Objective (PDO):
The project development objectives are to: (i) improve road transport to project areas through providing satisfactory physical condition and safety in selected roads; and (ii) strengthen institutional arrangements for road maintenance including the participation of the private sector and communities.

<table>
<thead>
<tr>
<th>PDO Level Results Indicators</th>
<th>Core</th>
<th>Unit of Measure</th>
<th>Baseline</th>
<th>Cumulative Target Values</th>
<th>Frequency</th>
<th>Data Source/Methodology</th>
<th>Responsibility for Data Collection</th>
<th>Description (indicator definition etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator One: Kilometres of Roads rehabilitated</td>
<td>☑️</td>
<td>kilometres</td>
<td>0 km</td>
<td>10km 45km 90km 130km 150km</td>
<td>Quarterly</td>
<td>EPM/DoW Progress Reports</td>
<td>EPM/DoW</td>
<td>This indicator measures the cumulative number of kilometers of all roads reopened to motorized traffic, rehabilitated, or upgraded under the project.</td>
</tr>
<tr>
<td>Indicator Two: Kilometres of roads maintained to good and fair condition</td>
<td>☑️</td>
<td>percentage</td>
<td>35% (current percentage of good/fair roads in PNG)</td>
<td>36% 38% 40%</td>
<td>Biennially</td>
<td>EPM/NRA reporting</td>
<td>EPM/NRA</td>
<td>This indicator measures the percentage of the total classified road network in the project area that is in good and fair condition depending on the road surface and the level of roughness.</td>
</tr>
<tr>
<td>Indicator Three: Increase in the number of road users on project roads</td>
<td>☐️</td>
<td>percentage</td>
<td>0%</td>
<td>5% 10% 15% 20% 25%</td>
<td>Annual</td>
<td>DoW/RAMS reporting</td>
<td>EPM/DoW/RAMS</td>
<td>This indicator will monitor the increase in the number of road users on the project roads, as a percentage.</td>
</tr>
<tr>
<td>Indicator Four: Increase in the number of private sector companies actively engaged in road works</td>
<td>☐️</td>
<td>Numerical quantity</td>
<td>Number of private sector companies in the market at project commencement</td>
<td>20 30</td>
<td>Biennially</td>
<td>DoW reporting</td>
<td>EPM/DoW</td>
<td>This indicator will identify the number of private-sector companies actively engaged in road works at the end of the project.</td>
</tr>
</tbody>
</table>

INTERMEDIATE RESULTS

Intermediate Result (Component Two):

| Intermediate Result indicator One: Number of companies in training | Numerical quantity | 0 – at project commencement there will be zero companies being trained | 10 | 30 | Consultants | This intermediate results indicator will assess the number of private-sector companies that have been trained during the project’s lifespan. |
Annex 2: Detailed Project Description

59. RMRP II is expected to make a significant contribution to the GoPNG’s national road maintenance and rehabilitation program over the five year project implementation period, and will involve the rehabilitation, upgrading and maintenance of selected national roads and bridges, supported by project management and technical assistance. The project will commence in the latter half of 2011 continuing until 2016.

60. The geographical scope of RMRP II is likely to cover up to ten of the country’s nineteen provinces. Over the past decade the current RMRP has funded road and bridge rehabilitation and maintenance in eight provinces: Central, Gulf, Oro, Morobe, East New Britain, West New Britain, Manus and Western Province. GoPNG has indicated that RMRP II should continue in these same provinces, with the possible addition of Madang and Milne Bay.

61. All the roads and bridges rehabilitated, upgraded or maintained under the current RMRP have been selected on the basis of annual priorities and work plans generated by the government’s Roads Asset Management System (RAMS) and Bridges Asset Management System (BAMS). This framework and process will continue under the new project.

62. The following two components are proposed for RMRP II:

Component 1 – US $46.0 million: Rehabilitation, Upgrade and/or Maintenance of Roads and Bridges

63. This component will cover the physical implementation of works on sections of roads and bridges selected for rehabilitation, upgrading and/or maintenance under the project. There are two sub-components; the first comprises a number of sub-projects on the Hiritano Highway in Central and Gulf provinces that are already identified as priority projects. The second sub-component consists of funding for sub-projects that will be identified and selected through annual prioritization and planning, commencing after the first year of project implementation.

Sub-component 1.1 – Hiritano Highway:

64. Restoring and upgrading the Hiritano Highway between Port Moresby and Kerema, the capital of Gulf Province, is considered a high priority as the highway falls within the Petroleum Resource Area Economic Corridor, recently approved by the Cabinet, which forms the focus of the medium and long term economic development plans of the Central and Gulf regions. This sub-component will complete the sealing of the remaining unsealed sections of the highway between Port Moresby and Kerema.

65. Rehabilitation and Upgrade to Seal of the Hiritano Highway between Inawabui and Bereina Junction, and access link to Bereina village (appr. 18km) – US $6.7 million.
A section of the Hiritano Highway between Inawabui and Bereina Junction, and the short link from the highway to Bereina village, are in very poor condition and require rehabilitating and upgrading to bitumen-sealed surface. This section of the highway is approximately 18km in length and because of its poor condition vehicle speeds and traffic flow are severely restricted. The works to both roads will involve new drainage, overlaying the existing surface with new pavement layers, and a double-seal bitumen surface, as well as repairs to Angapanga Bridge. Upgrading this section will complete the sealing of the Hiritano Highway from Port Moresby to Malalaua. It is anticipated that this work will commence within the first 18 months of the project.

66. **Upgrade to Seal the Hiritano Highway between Malalaua and Kerema (67km) – US $12.6 million**. The 18 km section of the Hiritano Highway between Malalaua and Kepamai has recently been rehabilitated under RMRP to a gravel surface standard, while the 49 km section from Kepamai to Kerema is currently being rehabilitated – partly under RMRP – also to a gravel surface. For technical and logistical reasons, the overall length will be upgraded under RMRP II in two stages; initially the shorter eastern section from Malalaua within the first 18 months of the project, to be followed on its completion by the remaining longer, western section to Kerema. The works along both sections will involve reshaping the existing surface, adding a base course and double-seal bitumen surface. The work on the western section may involve additional earthworks to further raise the level of the road embankment across flood plains.

67. **Routine Maintenance of the Hiritano Highway between Malalaua and Kerema (67 km) – US$1.0 million** – The rehabilitation of the section from Kepamai to Kerema should have been completed by the start of RMRP II implementation. To prevent the completed gravel surface road deteriorating prior to the upgrading works commencing, a routine maintenance contract will be procured early in the project. If possible it will be undertaken concurrently with the sealing between Kepamai and Malalaua, in which case both works may be procured as a single contract to minimize mobilization costs.

**Sub-component 1.2 – Works to be identified and selected under annual programs:**

68. **Rehabilitation, Upgrade, and Maintenance of Selected National and National District Roads – US $17.0 million** – Improving National and National District Roads is of high importance to improve access and promote economic activity throughout PNG. This sub-component is expected to commence in the latter half of Year 2 of the project and will be implemented through annual works programs (AWP) of rehabilitation, upgrade and maintenance of selected road sections within the national road network, subject to prior review and agreement.

69. Under RMRP, the process of planning and setting of priorities for national roads requiring rehabilitation, upgrade and/or maintenance is undertaken annually by DoW Asset Management Branch, the government agency responsible for operating the Roads Asset Management Systems (RAMS), and this arrangement will continue under RMRP II.
The scope of works under this sub-component is not yet defined but will most likely involve minor earthworks, pavement layer works, gravel or bituminous surfacing, longitudinal and cross drainage, and ancillary works. Although the geographical scope of RMRP II is the ten provinces stated above, funding and capacity constraints are likely to restrict the works in any given year to two or three provinces. An example of a project for possible inclusion in this sub-component is the rehabilitation and maintenance of Momote Road, Manus (estimated cost – US$3.7 million).

Rehabilitation, Upgrade and/or Maintenance of Selected National and National District Bridges – US $8.7 million – A significant proportion of the road bridges in PNG are poor condition – old, under-designed, poorly maintained or generally in a poor state of repair – all of which pose a significant risk to road users. Bridge upgrade, rehabilitation and maintenance will be undertaken in this sub-component of RMRP II and might include; upgrading log bridges to concrete or steel structures, replacing missing bridge components of Bailey and other types of bridges; replacing timber decks with steel decks, clearing river channels and constructing river protection works.

Bridges identified for replacement may be due to unsatisfactory structural condition, or on the basis of safety grounds, where the bridge design is deemed to be unsafe for the hydraulic conditions, unsafe foundation conditions, or where increased axle loads are anticipated.

The bridges to be considered under this sub-component should be located within the sections of roads identified for rehabilitation, upgrade or maintenance under RMRP II and will be selected following an assessment of their existing structural condition and safety, and on the basis of the BAMS data. The program for bridge maintenance / replacement / repair will follow on from the works scheduled for the first 18 months of RMRP II and will be implemented through AWPs which would be subject to prior review and agreement.

Component 2 – US $7 million – Project Management, Design and Supervision Services, Capacity Building and Technical Assistance

Sub-component 2.1 – Project Management, Design and Supervision

Project Management – US $3.5 million – As a result of the success of the EPM arrangement under RMRP, it is proposed to engage an EPM for RMRP II. The EPM will be responsible for the project management and for overseeing implementation of the various rehabilitation, upgrade and maintenance works that will be undertaken. The EPM will be a selected professional project management team with qualifications and experience acceptable to the World Bank. They will provide key management support services during implementation and over the course of the entire RMRP II project to DoW through oversight of the procurement process and contract execution of a) consultancy services for design, supervision and technical assistance, and b) works contracts for roads and bridge construction works. The EPM will provide as a minimum a
full-time team leader and provincial managers who will be retained as required for each of the provinces when and where project works are being undertaken.

75. In addition to the above tasks, the EPM will include a qualified accountant with financial management skills along with local support personnel (an accounts clerk and secretary). The services to be carried out by the financial team will include development, prioritization and programming of the annual works program, assisting in the procurement of consulting services and contractors, supervision of the works, training of the DoW staff at headquarters and in provinces where works are being undertaken (and possibly provincial administrations’ technical and administrative staff where applicable), maintaining project and detailed contract documentation and records for procurement as well as financial and physical implementation data, preparing cash flow projections for the project and progress reports, arranging for semi-annual reviews of the internal financial controls for the project, annual audits and final audit of all project financial records, and preparation of the project implementation completion report.

76. A program of activities for monitoring and evaluation of the various project components will be financed partly under this sub-component, and partly under the other two sub-components below.

77. **Detailed Design and Supervision of Road and Bridge Works – US $1.5 million** – All road and bridge works will require detailed design and supervision of construction. The design phase will involve field surveys and investigations, establishment of design parameters, preparation of design drawings as required, and appropriate bidding documents. Supervision of construction and contract administration will follow the procurement process and award of contracts.

78. It is expected that the design and supervision of most rehabilitation and maintenance of roads and bridges will be executed directly under the EPM contract, but suitably qualified and experienced engineering consultants, firms and/or individuals as appropriate, will be selected as required to undertake detailed design and supervision services of roads and bridge works requiring specialist geotechnical/materials engineering, hydraulic/hydrological engineering, or road pavement design.

**Sub-component 2.2 - Capacity Building and Technical Assistance for Road Sector Support:**

79. Recognizing the limited capacity of NRA in assuming responsibility for maintenance of an increasing proportion of the national road network, and the limited capacity of small to medium sized contractors to undertake that maintenance, this component will aim to further strengthen the capacity of the road sector, following on from the work undertaken during the current RMRP. This component allows for the provision of consulting services and training for: a) strengthening of small and medium-sized contractors for road rehabilitation, upgrade and/or maintenance operations, b) institutional strengthening of NRA for ensuring effective road maintenance is undertaken,
and c) carrying out monitoring and evaluation activities to improve the information database on road usage.

80. **Capacity building for small and medium sized contractors – US$0.4 million** – Providing technical assistance (including training and management) to small to medium sized contractors will create a stronger contracting sector that will in turn promote competitiveness between the contracting companies. This should indirectly lead to higher standards of work being achieved.

81. The detailed scope of support to be provided to small to medium sized contractors under RMRP II will be defined and refined under a TA consultancy, but is likely to include: a) formal training courses, b) assistance to the contractors in preparing bidding documents; and c) assistance to the contractors during the duration of the contact on work management, costing, quality control, site planning, construction techniques and contract administration.

82. In addition to formal courses, on-the-job training and assistance will be provided to small and medium sized domestic contractors in each province where works are being implemented under RMRP II.

83. Some of the civil works packages that will be funded under RMRP II, such as regravelling and routine maintenance, would be suitable for small and medium sized domestic contractors. However, a significant proportion of the work program will involve rehabilitation and sealing of roads as well as the potential for bridge replacements which are expected to be beyond the capabilities of small to medium sized entities. It is proposed that bid documents for such works will provide incentives for bidders to use local small and medium sized contractors as sub-contractors.

84. **Institutional Capacity building for the NRA – US$0.35 million** – This sub-component would provide technical assistance through DoW to NRA to support its maintenance activities on selected national roads in provinces where RMRP has previously supported rehabilitation works. Following rehabilitation of roads carried out by DoW across the country, the responsibility for maintaining the roads is transferred to the NRA as prescribed under the NRA Act of 2003. However, NRA is a relatively new institution that needs support with developing appropriate maintenance modalities (planning, specific contractual arrangements, etc). NRA is also keen to explore innovative approaches to road maintenance, such as longer-term performance-based contracting.

85. Formal training courses in project management, planning, implementation, quality control, costing, and contractual arrangements etc will be included under this component. It is proposed that these activities will be overseen by a Training and Support Manager who would be employed under the project.

86. **Monitoring and Evaluation activities, including Study of Socio-economic Impacts of Roads and Bridge Improvements – US$0.25 million** – Monitoring and Evaluation of
key project activities and results indicators will be undertaken on a regular basis throughout the project. Quantitative data will be collected and analysed using the RAMS and BAMS and reported by the EPM under sub-component 2.1 above.

87. The effect of the road and bridge improvements on the population served by the roads involved will be assessed through baseline and follow-on socio-economic surveys to be undertaken during the life of the project. Since lack of year-round accessibility is a major constraint to social as well as economic integration and development, the broader positive and negative impacts of improved access resulting from road maintenance and rehabilitation on the livelihood and quality of life of the affected communities will be assessed. Specialist consultants will be competitively selected to undertake the socio-economic baseline and follow-up surveys and analysis for each major project intervention.

**Sub-component 2.3 – Incremental Operating Costs**

88. Incremental Operating Costs – US $1.0 million. This sub-component will fund incremental operating costs incurred by DoW for the implementation of the project and may include (a) maintenance and operation of equipment and vehicles procured or used for the management of the project; (b) salaries paid to staff hired for the purposes of the project; (c) travel costs and per diems; (d) consumable office supplies; (e) communication, printing and publications; (f) bank charges; and (g) other miscellaneous costs.
Annex 3: Implementation Arrangements

Project Administration

87. The responsibility for the implementation of rehabilitation and upgrade works for roads in PNG lies with DoW. On this basis, DoW will be the lead agency for the project overall, and particularly for works carried out on national roads and bridges. At the same time, NRA was instituted as an independent authority, has been operating for the last three years and will be assuming increasing responsibility for the roads network of the country. Roads that are in good condition, or roads that are rehabilitated and/or upgraded to an acceptable standard, may be transferred to the NRA who will then assume responsibility for the implementation of maintenance. It is anticipated that this arrangement will continue for the duration of RMRP II. NRA will therefore be the agency responsible for implementing road maintenance on a number of sections of national and national district roads. This project will not fund NRA directly, as the institution is relatively new and is gradually increasing the number of roads for which it assumes responsibility. In the medium-term NRA is expected to pursue a number of projects for which it has accumulated unspent resources over the last few years.

88. For the proposed Component 2, which includes technical assistance for project management, detailed design and supervision, and various capacity building efforts, DoW will be responsible for ensuring that these tasks are carried out under the project. DoW will be the agency responsible to facilitate these activities by engaging necessary firms or individuals as required. This is the current and successful arrangement in place for the existing RMRP. In addition, and also as per the current RMRP arrangement, DoW will acquire the services of an EPM. The EPM, in close collaboration with DoW, will be responsible for the following:

- Preparing annual work programs;
- Preparing project cash-flow requirements;
- Making recommendations on the selection of design and supervising engineers;
- Preparing bidding documents;
- Assisting with bid evaluation and recommendations for award of contracts;
- The timely execution procurement and implementation of the project; and
- Supervising environmental clauses in the bid documents for civil works.

89. The EPM will also assist DoW in the administrative aspects of project supervision and monitoring, including critically reviewing performance of contractors and consultants, implementing the financial control system for project-related expenditures, and ensuring that reports and project audits are submitted on a timely basis.

90. To ensure satisfactory project implementation on the ground for both national and national district roads and bridges, a PEPM will be provided in provinces at the time that physical works are taking place. The PEPMs will report directly to the EPM, who in turn will report directly to the Project Manager, who is assigned by the Secretary of DoW.
91. Despite the large scope of management and implementation activities assigned to the EPM, overall responsibility for the project will still lie with DoW. In particular, the DoW, in consultation with the EPM and PEPMs, will identify priority works for inclusion in the annual investment program. The priority works will be identified in part through the use of RAMS. Subsequently, DoW will review and approve the annual investment program and will submit an annual budget.

92. Finally, the project will benefit from a Steering Committee, which will include representatives from: (i) the Department of National Planning and Monitoring; (ii) the Department of Treasury; (iii) NRA; (iv) Department of Transport; and (v) will be chaired by the representative of the Department of Works. The Steering Committee will provide general guidance and oversight of the project to ensure effective coordination among the various agencies and alignment with the GoPNG strategic priorities.

93. It is expected that the first upgrading contracts under RMRP II will be completed and handed over to NRA in Year 2 of the project. Prior to this point, the project will work closely with the NRA to develop an appropriate mechanism for procuring and managing long-term performance-based maintenance contracts. Subsequently, the project will closely monitor the progress of the first contracts during the remaining two or three years of project implementation, to ensure that the maintenance program is being effectively implemented and will continue in a sustainable manner beyond the project closing date.

Financial Management

94. The FM capacity assessment identified the lack of financial management capacity in DoW as the principal risk. To mitigate this risk, the project will continue with the existing FM arrangements currently in place for P004397 PNG Road Rehabilitation and Maintenance Project, including the management of the financial aspects of the project by a project management consultancy (the EPM) engaged by DoW.

95. The FM risk has been assessed as “Low”, as it will be relying on existing FM arrangements of P004397, which is rated as “Low” and the FM performance assessed as “Satisfactory” in recent supervisions. No FM conditions at negotiations or effectiveness are recommended.

a. **Budgeting.** As with the existing roads project, a budget will be developed and monitored for this project, with analysis of budget vs. actual expenditure forming part of the required quarterly financial reporting. Project funding and expenditure will also be subject to variance analysis.

b. **Funds flow.** The project proceeds will flow from the Bank into a project designated account (DA) to be managed by DoW. This implementing agency, through the EPM, will be directly responsible for the management, maintenance and reconciliation of DA activities for their component, including preparation of withdrawal applications and supporting documents for Bank disbursements.
c. **Accounting and financial reporting.** The administration, accounting and reporting of the project finances by DoW will be set up in accordance with the provisions of the Public Financial Management Act. DoW will be responsible for managing, monitoring and maintaining project accounting records. Original supporting documents will be retained by the implementing agency. Unaudited interim financial reports (IFRs) will be prepared on a quarterly basis, and may be submitted to the Bank as part of a larger project report. The financial reports will include an analysis of actual and budgeted expenditure for the current period, and for the cumulative to date. The format will be developed and agreed by the implementing agency and the World Bank. The IFRs will be forwarded to the World Bank within 45 days of the end of each calendar quarter.

The project will utilize a computerized project software package. In the existing roads project, funds are accounted for through an accounting package called WinBank, which has been customized for that project, and can produce the required financial reporting. This will be updated as required.

d. **Internal control.** There will be reliance on existing financial policies and procedures used in the DoW for the financial management of the existing roads project. These have been found to be adequate, and no material internal control issues have been raised in recent audits. To assist the EPM to manage the Bank-specific requirements of the project, a brief FM manual will be developed to provide guidance on financial reporting, disbursement and audit requirements.

e. **Audit.** The project finances will require an annual external audit, due to the World Bank six months after the close of the financial year. Consistent with the current road project, the audit will be conducted by the Office of the Auditor General. The audits of Bank projects managed by DoW are currently up to date, and of a standard acceptable to the Bank.

f. **Disbursements.** Three disbursement methods are all available for the project: advance, reimbursement and direct payment. Supporting documents required for Bank disbursement under different disbursement methods will be documented in the Disbursement Letter issued by the Bank.

A designated account (DA) in local currency will be opened at a commercial bank acceptable to the Bank, and will be managed by DoW through the EPM. The ceiling of the DA will be determined and documented in the Disbursement Letter.

The project funds will be disbursed against eligible expenditures as per the following table:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
<th>Percentage of Expenditures to be financed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good, Works, non consulting services and consultants’ services for Part 1 (Component 1) of the project.</td>
<td>US$36.0 million equivalent</td>
<td>78%</td>
</tr>
<tr>
<td>Goods, non consulting services and consultants’ services for Part 2 (Component 2) of the project.</td>
<td>US$6.0 million equivalent</td>
<td>100%</td>
</tr>
</tbody>
</table>
Procurement

96. **Procurement Risk Assessment and Management.** A procurement risk assessment was carried out, in consultation with the Department of Works (DoW), the Employer’s Project Manager (EPM) for the first RMRP, and the Central Supply & Tenders Board (CSTB) under the Ministry of Finance. The DoW has full responsibility for the implementation of road construction/rehabilitation works. Under the PNG Public Finance Management (PFM) Act, DoW has the authority to process and approve contracts up to a threshold of K 300,000 (USD 120,000). The CSTB has authority to approve contracts above K 300,000 (USD 120,000). All contracts have additionally to be cleared by the State Solicitor and contracts over K 10 million (USD 4 million) require further authorization by the National Executive Council. While DoW has experience working with the Bank (in the ongoing RMRP), it is short-staffed particularly at the provincial level and has limited expertise in procurement and contract administration. As a result, DoW may rely on consultants for technical and fiduciary support (Employer’s Project Manager). On the contractor capacity side, DoW reported that security and access constraints limit competition in some areas. In addition, the project will be competing with other development projects (such as PNG LNG) to be implemented over the next few years. In road maintenance works, community contracting is reported to be minimally effective while works undertaken by the National Capital District Council (NCDC), through “work-camps”, is considered more effective.

97. **Procurement-related Risks, Rating, and Mitigation Measures.** Key risks identified are:

- Processing delays and poor quality outputs as a result of inadequate in-house capacity and expertise.
- Likelihood of occurrence of corruption and collusion, due to limited contractor interest/availability.
- The procurement-related risk is rated High. Upgrading of the risk will be contingent on DoW hiring competent project management, and design and supervision consultants, where necessary.

98. Measures to mitigate the risks include:

- Hiring of consultants to support DoW, in the capacity of Employer's Project Manager (EPM), as for the original RMRP.
- Hiring of technical assistance for design and supervision of complex works.
- Conducting programs to promote awareness and assess contractor interest and availability.
- Packaging contracts to match contractor availability and interest, depending on location.
• Ensuring regular updating and approval of procurement plans, with contract packaging and timing based on contractor capacity, access and security considerations.
• Agreed procedures for procurement under national competitive bidding
• Introducing monitoring indicators relating to processing and contractor responsiveness.
• Procurement refresher training for government staff.
• Exploring avenues for third-party monitoring.

99. **Guidelines.** Procurement for the proposed Project would be carried out in accordance with the World Bank’s “Guidelines: Procurement under IBRD Loans and IDA Credits” dated May 2004, revised in October 2006 and May 2010, and “Guidelines: Selection and Employment of Consultants by World Bank Borrowers” dated May 2004, revised in October 2006 and May 2010; and the provisions stipulated in the Financing Agreement.

100. **Thresholds.** Prior-review and procurement method thresholds recommended for the project are indicated in Tables 3.1 and 3.2 below. These thresholds may be revised during project implementation, based on risk assessment updates.

<table>
<thead>
<tr>
<th>Table 3.1: Goods, Works and Non-Consultant Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior Review threshold (USD)</td>
</tr>
<tr>
<td>ICB</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>Goods</strong></td>
</tr>
<tr>
<td>≥100,000, first 3 contracts irrespective of value, and all DC</td>
</tr>
<tr>
<td><strong>Works</strong></td>
</tr>
<tr>
<td>≥100,000, first 3 contracts irrespective of value, and all FA</td>
</tr>
</tbody>
</table>

ICB – International Competitive Bidding  
NCB – National Competitive Bidding  
S – Shopping  
DC – Direct Contracting  
FA – Force Account, based on DoW’s sanctioned Schedule of Rates  
CPP – Community Participation in Procurement
Table 3.2: Consultant Services

<table>
<thead>
<tr>
<th>Prior Review threshold (USD)</th>
<th>Procurement method threshold (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QCBS, QBS, FBS, LCS</td>
<td>CQS</td>
</tr>
<tr>
<td>Firms</td>
<td>SSS</td>
</tr>
<tr>
<td>≥100,000, first CQS, and all SSS</td>
<td>No threshold</td>
</tr>
<tr>
<td>Individuals</td>
<td>≥100,000, all procurement services, and all SSS</td>
</tr>
</tbody>
</table>

QCBS – Quality- and Cost-Based Selection  
QBS – Quality-Based Selection  
FBS – Fixed Budget Selection  
LCS – Least Cost Selection  
CQS – Consultant’s Qualification Selection  
SSS – Single Source Selection

101. The above thresholds may be revised during project implementation, based on capacity and risk assessment updates.

102. **Procurement Plan.** A summary of the project procurement plan for the first eighteen months of the project is provided in Tables 3.3 and 3.4 below. A total of ten works contracts are envisaged for the project period. The plan will be updated every six months, to reflect project implementation needs.

Table 3.3  
PNG: RMRPII  
Procurement Plan for Works & Goods

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>Estimated Cost US$</th>
<th>Procurement Method</th>
<th>Domestic Preference (yes/no)</th>
<th>Review by Bank (Prior / Post)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1</td>
<td>Rehabilitation &amp; upgrade to seal of Hiritano Highway between Inawabui and Bereina</td>
<td>6,700,000</td>
<td>ICB</td>
<td>Yes</td>
<td>Prior</td>
<td>Approx 18km</td>
</tr>
<tr>
<td>W2</td>
<td>Upgrade to seal of Hiritano Highway between Malalaua and Kepamai</td>
<td>3,300,000</td>
<td>ICB</td>
<td>Yes</td>
<td>Prior</td>
<td>Approx 18km</td>
</tr>
<tr>
<td>W3</td>
<td>Routine maintenance of Hiritano Highway between Malalaua and Kerema</td>
<td>1,000,000</td>
<td>ICB</td>
<td>Yes</td>
<td>Prior</td>
<td>Approx 50km</td>
</tr>
<tr>
<td>G1</td>
<td>Supply of vehicle for DoW RAMS</td>
<td>45,000</td>
<td>Shopping</td>
<td>No</td>
<td>Prior</td>
<td>For condition data collection</td>
</tr>
</tbody>
</table>
Table 3.4  
PNG: RMRP II  
Procurement Plan for Consultancy Services

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description of Assignment</th>
<th>Estimated Cost USS</th>
<th>Selection Method</th>
<th>Review by Bank (Prior / Post)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>Employer’s Project Management Consultant (includes design &amp; supervision of standard rehabilitation/upgrading works)</td>
<td>4,000,000</td>
<td>QCBS</td>
<td>Yes</td>
<td>Advance contracting of the EPM will be initiated</td>
</tr>
<tr>
<td>C2</td>
<td>Capacity Building &amp; Technical Assistance Consultant</td>
<td>250,000</td>
<td>QCBS</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

103. **Procurement Post Review.** Procurement post review missions will be carried out bi-annually. A sample of 20% of contracts not subject to prior review will be post reviewed, but may be reduced to 15% following satisfactory findings and upgrading of the risk.

**Environmental (including safeguards)**

104. The positive impact of improved roads on the community is comprehensive and multidimensional in scope. The improvement in commerce and the movement of goods and people is immediately evident. In general, the present baseline condition of the roads in the selected provinces of RMRP II reveal a dire need for rehabilitation and repair. For example, some parts of the Hiritano Highway in the Central province are totally impassable. Poor road conditions lead to constrained and impeded economic growth and transportation. Better roads will influence the local economy, and improve the health and education of the community in the direct area of influence of these road projects.

105. The negative environmental impacts of the project can be categorized in two general areas: construction related impacts and impacts from the operation of the highway. Construction related impacts are predictable, limited in scope and easily mitigated. These impacts are in the areas of earthworks, pavement works, drainage works, bitumen works, erosion protection and campsite management. The common impacts would be increased noise and dust, sedimentation of water bodies in the immediate area of works, air emissions from bitumen heating, spillages of bitumen, earth movement in borrow pits, vegetation buried under sidecast material and generation of solid waste and domestic waste from campsites. During the operation phase of these rehabilitated roads, the potential negative impacts are related to the increased speed of vehicles. This can impact communities who walk on the roadside specifically in communities where school children use the roads to get to and from their schools. There may be an increase in roadkill of fauna due to higher traffic, but the impact of this on the total population of wildlife will not be significant.
a) **Assessment of Safeguards Implementation in RMRP.** The Environmental Unit of the DoW has carried out an assessment of the original RMRP project where it identified areas for improvement in the implementation of environmental safeguards. It specifically cited the lack of capacity in the DoW and the Contractors in the area of Environmental Management. The Environmental Unit of the DoW was established as required under the original RMRP. This unit has been sometimes understaffed, making it difficult to supervise and monitor the implementation of environmental safeguards in the road projects. A series of training seminars on safeguards was carried out under RMRP. These training seminars, combined with the actual work experience during project implementation, have significantly increased the capacity of DoW. As a result of this assessment the DoW is set to increase staffing numbers of the Environmental Unit. Training and capacity building on safeguards implementation is included under Component 2 of RMRP II. Specific training on safeguards will be scheduled in the first year of project implementation. The DoW has produced a comprehensive set of materials for safeguards training.

b) **Status of Safeguard Implementation.** An Environmental and Social Impact Management Plan (ESIMP) was prepared in 2001 and used in the original project. An EMP based on ESIMP has been prepared for RMRP II to cover the 1st year Projects (Hiritano Highway). For the projects to be implemented after Year 1, an Environmental Management Framework (EMF) has been prepared. Public Consultations were carried out for the First Year Project (Hiritano Highway). These consultations were done in several points along the Hiritano Highway on January 2011. Documentation of these consultations have been prepared and submitted to the Bank. These documents have been reviewed by the Bank and disclosed. An updated Land Acquisition and Resettlement Framework (LARF) will also be prepared based on the original RPF included in the 2001 ESIMP. The Department of Works (DoW) has found the RMRP EMP useful in the implementation of the original project.

c) **Environmental Assessment.** The Environmental and Social Management Framework (ESMF) defines the steps to be taken in relation to the requirements for Environmental Assessment, during project preparation, implementation and completion. The procedure outlined in the ESMF starts with a screening process which will determine the scope of impacts of specific road projects. An Environmental Management Plan will be prepared for each sub-project based on the results of the screening process.

d) **Environmental Protection in construction contracts.** Works contractors will be responsible for the implementation of all safeguards instruments, specifically the EMP. The cost of implementation of the EMP will be included in all works contracts to ensure that the measures outlined in the EMP are funded and properly executed. The project will require all construction contracts to contain clauses defining the responsibilities of contractors in relation to safeguards.

e) **Public consultation and disclosure requirements.** Public consultations will be required of all individual road projects. This will assist the DoW in identifying all the concerns and issues of the local communities. These consultations will follow the
guidelines outlined in the ESMF. The proceedings/ minutes of these consultations will be documented and disclosed in accordance with the Bank’s Access to Information Policy.

f) **Social and Environmental – Monitoring and Supervision Arrangements.** Detailed supervision and monitoring activities are outlined in order to ensure that recommended mitigation measures are followed. The supervision of these will be the responsibility of the EPM. Contractors, whose compliance will be monitored by the consultants supervising the construction and by the Provincial Employer’s Project Manager (PEPM), will implement provisions of the safeguards instruments e.g. Environmental and Management Plans (EMP). These responsibilities have been included under the terms of reference of the design and supervision consultants and the EPM. The Safeguards Instruments contain detailed environmental compliance monitoring requirements, including parameters and indicators for all activities relating to the recommended mitigation measures. DoW, through its Environmental Management Unit, will provide coordination, oversight and monitoring for environmental and social impact assessment related to the implementation of the RMRP. The World Bank, through its supervision missions, would also monitor the impact of the project on the environment.

g) **Building Institutional Capacity.** The Environmental Management Unit of the DoW is the main entity responsible for the proper implementation of the Bank’s safeguards requirements. The staffing complement of this unit will be increased by recruiting additional environmental officers. It is essential to train these new staff on the environmental management requirements of projects. Specifically for RMRP II, the Environmental Management Unit will need training and capacity building. The unit will need training on the use and application of the various safeguards instruments such as the EMP and ESMF. It is important to institutionalize the safeguards measures in RMRP II in the DoW such that social and environmental concerns are included in the project cycle of the DoW.

**Social (including safeguards)**

106. The project is expected to have significant positive impacts for communities by improving roads. Ongoing social assessments under the RMRP project show that road rehabilitation is linked to a rise in income for households, particularly as it expands access to markets. Improved roads may also help to cut transportation times to health facilities and schools (particularly for people living near the road). A smaller risk of adverse impacts, such as accidents due to higher speeds, remains. The project is designed to minimize social risks by rehabilitating the existing roads within the right-of-way and within the formation width, with adequate provisions for traffic signs and speed bumps. Ongoing consultations with communities during project preparation and implementation are important to raise awareness of safety issues, discuss locations of speed bumps and incorporate any ideas or concerns that may help to improve the project.

107. Works are expected to take place within the right-of-way and therefore land acquisition or disturbance to property is expected to be minimal. However, because there is a possibility that some impacts may occur, OP 4.12 on Involuntary Resettlement is
triggered. As a result, a LARF has been prepared to address any land acquisition or livelihood impacts that may arise such as loss of crops alongside the road, livelihood impacts etc. In a first instance, since only rehabilitation works to the Hiritano Highway are known at this stage of project preparation, the LARF has been prepared in English and translated into Tok Pisin which are the two main languages in the area. The LARF has been disclosed during consultations with project stakeholders and if necessary will be revised to include any inputs from stakeholders. DoW is the entity responsible for organizing the consultations and they worked in conjunction with Local Level Governments, the Church and NGOs to organize the consultations and invite stakeholders. The main aim of the consultations was to inform stakeholders of the project and get feedback as to how to improve the project and ensure it can benefit all the stakeholders. The consultations also disclosed a grievance mechanism to address any impacts that may arise. This is based on existing traditional mechanisms in PNG in which responsibility for compensation and resolving grievances rests with the Provincial Lands Office. The LARF details the full mechanisms for grievance resolution that are in place. Once sub-projects are identified in later years, similar arrangements will take place to ensure the LARF benefits from stakeholder feedback and is disclosed in an appropriate language and that consultations take place with project stakeholders.

108. The project triggers OP 4.10 on Indigenous Peoples (IP) as most of the communities in the provinces the project is targeting fulfil the characteristics of indigenous peoples as per paragraph 4 of OP 4.10. As a result, the Borrower will not prepare a separate Indigenous Peoples Plan/Indigenous Peoples Policy Framework. Given that ongoing social assessments have been carried out throughout the project provinces under RMRP, including along the Hiritano Highway in 2010, a new social assessment will not be carried out for this project. By and large, the arrangements that were put in place to address IP issues effectively under the RMRP, which have been found to be suitable, will be implemented under RMRP II. The following aspects of an IP Plan have been integrated in design and preparation of the project:

a) *Free, prior and informed consultation leading to broad community support has been conducted during project preparation*. Consultations took place in seven sites along the Hiritano Highway, with communities and public servants, to ensure people were informed of the project and received an opportunity to offer their ideas and share their concerns in order to improve the project. Consultations also took place as part of a Social Assessment under the RMRP, to assess how communities use the road and their thoughts of the road, among others, which will serve as a baseline for further monitoring. Broad community support has been assessed based on these consultations the consultative and participatory process that took place during the undertaking of the social impact assessments. The 2010 baseline survey for the Hiritano Highway highlights strong stakeholder support for the project. Additional consultations were also undertaken as part of a World Bank documentary, which compiled the views of communities along the Hiritano Highway of the current state of the road and the proposed rehabilitation under the project, particularly in Kerema. These communities broadly supported the project as it will give them access to improved roads, including greater access to Port Moresby and the Central Province’s capital, Kerema.
b) A framework for free, prior and informed consultation will be put in place during project implementation. Under the RMRP a system of PNG volunteers was suggested as the best means to ensure consultations took place during project implementation. However, this approach was found unviable in practice due to lack of capacity, funds and management oversight. Instead, the RMRP relied on the contractors to carry out consultations as part of their contract, in conjunction with DoW. In this way, contractors are legally bound to ensure that they consult throughout implementation with stakeholders, and ensure views are documented. DoW is ultimately responsible for monitoring the work of the contractors and ensuring that stakeholders are consulted during project implementation. As this approach has been working thus far, it should continue under RMRP II. Contractor’s contracts will need to ensure that appropriate consultations take place, and that a record of these consultations is kept, and DoW will need to ensure they work closely with the contractors.

c) Measures to ensure culturally-appropriate benefits are being included in the project. The project is culturally-appropriate as it benefits access to markets, schools and health services, among others. Moreover, the project will encourage contractors to use local labor, giving priority to anyone who has experienced project impacts. Attention will also be paid to women to ensure they have equal access to jobs and pay. A community road management component is also included in the project, to ensure those living alongside the road share in additional benefits from the project and also help to ensure its sustainability. The NRA has been working on community management of roads in other areas of PNG and this experience will be harnessed and furthered under RMRP II. Special attention will be paid to women and anyone experiencing impacts as a result of the project.

d) Measures to ensure that adverse impacts are mitigated, including an appropriate grievance system, will be in place. As described, existing grievance procedures, which are culturally appropriate, are being put in place to deal with any impacts or concerns due to the project. Stakeholders along the Hiritano Highway have been informed of this grievance system, and future stakeholders will also be informed during consultations, once further sites have been identified.

e) Measures for disclosing key project documents are in place. In the case of the Hiritano component of this project, documents are available in Tok Pisin and English which are the main languages used in the area. Documents were disclosed during the consultations and are available in Provincial and District offices. Once subprojects are identified, similar procedures will take place. The Resettlement Action Plan (RAP) will be translated in the language/s spoke in a particular area, and culturally-appropriate consultations will take place.

109. DoW will be the main entity responsible for supervising the project. If project impacts occur, DoW will be responsible for ensuring RAPs are prepared (most likely abbreviated plans) and implemented in conjunction with the Lands Office. DoW will also be responsible for ensuring that contractors conduct appropriate consultations with
stakeholders, informing them of the subprojects and eliciting their views, incorporating comments into project design when feasible, and documenting these consultations. If necessary, NGOs can be asked to provide third party monitoring to the land acquisition process.

**Monitoring & Evaluation**

110. The data for the project’s outcome and results indicators will come from (i) quarterly EPM project progress reports for kilometers of roads and numbers of bridges upgraded or rehabilitated, (ii) annual road condition surveys for condition of maintained roads, (iii) bi-annual traffic surveys for increase in road users, and (iv) annual capacity building consultants’ reports for number of contractors trained.

111. For collection and analysis of all data relating to the PDO level indicators, the project will utilize the resources of NRA where applicable, but primarily the Asset Management Branch of DoW, which currently collects, stores and analyses data on road use and condition under the existing RMRP and other donor funded projects, using the HDM-IV based Roads Asset Management System (RAMS) to undertake comparative economic analysis of national roads for prioritization of rehabilitation and maintenance. The Asset Management Branch also maintains a separate database of road bridges (BAMS) and historically undertook regular inspection of all national road bridges to prioritize their maintenance.

112. Budget, equipment and capacity constraints limit DoW’s ability to carry out bi-annual counts at the 191 strategic survey locations covering the entire national road network, or at selected locations for specific project road sections. Where current data is unavailable, historic or proxy data is used in the analysis which reduces the reliability of economic analysis for prioritization purposes. In recent years, similar constraints have also limited DoW’s ability to maintain the BAMS database and prioritization program.

113. To overcome these constraints the project will provide technical and logistical support for data collection and analysis from the EPM as required. In addition, a vehicle will be purchased under the project for DoW Asset Management Branch to use for road condition surveys and transporting staff and equipment to undertake traffic surveys within the provinces of the southern region. These arrangements should ensure the reliability of all collected data.

114. The training / capacity building consultant will be responsible for collecting and analysing data relating to the sole specific intermediate results indicator (number of local contractors trained).

115. Utilizing the monitoring data obtained, Progress Reports will be compiled by the EPM, in conjunction with DoW and NRA. The reports will cover the entire project and will be provided to the Bank quarterly, not later than 45 days after the end of each

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10 Two of the five PDO level indicators (km of roads rehabilitated, and km of road maintained in good or fair condition) will be monitored and evaluated in the national context as well as at project level.
calendar quarter. The reports will evaluate the rate and quality of physical progress of works achieved during to date, both cumulatively and for the period covered by each report, summarize procurement under the project (including reporting on selected procurement-related indicators), expenditures under contracts financed out of the proceeds of the loan, estimated cost of the project versus available funding, and projection of financing needs by quarter for the next six months, as well as explaining variances between the actual and previously forecast implementation targets. Each report will include a table of indicators showing actual and predicted outcomes/results, with a commentary on the reasons for the differential and actions where appropriate to reduce or eliminate the difference.

116. Environmental and Social Management plans contain detailed environmental compliance monitoring requirements, including parameters and indicators for all activities relating to the recommended mitigation measures. DoW, through its environmental unit, will provide coordination, oversight and monitoring for environmental and social impact assessment related to the implementation of the RMRP. The World Bank, through its supervision missions, will also monitor the impact of the project on the environment.

117. The effect of the road and bridge improvements on the population served by the roads involved will be assessed through baseline and follow-on socio-economic surveys to be undertaken during the life of the project. Since lack of year-round accessibility is a major constraint to social as well as economic integration and development, the broader positive and negative impacts of improved access resulting from road maintenance and rehabilitation on the livelihood and quality of life of the affected communities will be assessed. A specialist consultant will be contracted to undertake and report on this activity.

118. The estimated incremental cost of M&E activities will be US$0.25 million, to be funded by the project. The costs are summarized as follows:

### Cost of M&E activities for RMRP II

<table>
<thead>
<tr>
<th>Item/Activity</th>
<th>Responsible Agency</th>
<th>Cost (US $ Million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Counting kilometers of roads rehabilitated or upgraded</td>
<td>EPM</td>
<td>Included under Sub-component 2.1</td>
</tr>
<tr>
<td>(ii) Annual condition survey of maintained roads</td>
<td>DoW/NRA</td>
<td>0.20</td>
</tr>
<tr>
<td>(iii) Annual traffic/road-user surveys</td>
<td>DoW</td>
<td>0.10</td>
</tr>
<tr>
<td>(iv) No of local contractors engaged in competitively awarded road works contracts</td>
<td>TA consultant</td>
<td>Included under Sub-component 2.3 a)</td>
</tr>
<tr>
<td>(v) Socio-economic Impact Evaluation</td>
<td>Specialist consultant</td>
<td>Included under Sub-component 2.3 c)</td>
</tr>
</tbody>
</table>
## Annex 5:
Operational Risk Assessment Framework (ORAF)

### Project Development Objective(s)

The project development objectives are to: (i) improve road transport to project areas through providing satisfactory physical condition and safety in selected roads; and (ii) strengthen institutional arrangements for road maintenance including the participation of the private sector and communities.

<table>
<thead>
<tr>
<th>PDO Level Results Indicators:</th>
<th>1. kilometers of roads rehabilitated</th>
<th>2. kilometers of roads maintained to good and fair condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. increase in number of road users on project roads</td>
<td>4. increase in the number of private sector companies actively engaged in road works</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Category</th>
<th>Risk Rating</th>
<th>Risk Description</th>
<th>Proposed Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Stakeholder Risks</td>
<td>Low (Low Impact/Low Likelihood)</td>
<td>Central or regional Government, local communities, other donors, oppose the project.</td>
<td>Continue dissemination activities regarding RMRP impacts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Consultations with local communities during project preparation and implementation</td>
</tr>
<tr>
<td>Implementing Agency Risks</td>
<td>Medium I - (High Impact/Low Likelihood)</td>
<td>Despite DoW commitment to improving the roads network, the quality of its staff and hardware systems is weak, while funding is overall inadequate. Only a limited number of private sector contractors are able to undertake good quality and sizeable roads projects. Risk unlikely, DoW has a solid structure in place and a good working relationship with the current EMP under RMRP. Risk of fraud and corruption in use of project funds and allocation of contracts</td>
<td>Technical assistance will be provided to assist with: (i) the detailed engineering design and supervision of works and contracts; (ii) the project's financial management; and (iii) the preparation of procurement documentation Phase project works to match available contracting capacity and technical assistance for small and medium contractors Maintain ongoing good relationship with DoW and EPM to ensure that the implementing agencies are in good shape. Provide technical assistance with a dedicated Employer's Project Manager consultancy, and design &amp; supervision consultants, following RMRP arrangements. Conduct programs to promote awareness and assess contractor interest/capacity. Package contracts based on location and contractor interest/availability, and regular updating and approval of procurement plans. Supervise closely project activities and works (a minimum of three supervision missions annually during implementation) Explore avenues for third party independent monitoring (such as TI).</td>
</tr>
<tr>
<td>Project Risks</td>
<td>Impact/Likelihood</td>
<td>Description</td>
<td>Mitigation/Preventive Measures</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Design</td>
<td>Low (Low Impact/Low Likelihood)</td>
<td>Delays in decision-making and final selection of projects outside the implementing agencies. Slow uptake of performance-based modalities in roads maintenance.</td>
<td>Continue engagement with the National Transport Strategy process, and Transport Infrastructure Priority Study analysis to ensure that priorities remain consistent. Targeted technical assistance to DoW and NRA for performance-based contracts in roads maintenance.</td>
</tr>
<tr>
<td>• Social and Environmental</td>
<td>Medium – Low (Low Impact/High Likelihood)</td>
<td>Land owners delay works implementation. Socially adverse impacts (for instance spread of HIV/Aids, criminal activities along highways). Negative environmental impacts are not fully mitigated.</td>
<td>The project is designed to minimize social risks by rehabilitating existing roads. Ongoing consultation with stakeholders will help to identify project risks, build rapport with stakeholders and address any necessary issues. As under the current RMRP, specific HIV/AIDS clauses are included in works contracts consistent with the Bank’s Standard Bidding Document clauses on HIV/AIDS awareness and the Bank’s Toolkit for HIV/AIDS education in transport projects. During construction, contractors will ensure ongoing consultations with stakeholders, including raising awareness of safety considerations. The environmental impacts of roads reconstruction in PNG are predictable and can be effectively mitigated through careful design and project supervision. Appropriate Environmental Management Plans will be included in the works contracts.</td>
</tr>
<tr>
<td>• Program and Donor</td>
<td>Low (Low Impact/Low Likelihood)</td>
<td>Road planning and resource allocation causes delays during project preparation and implementation.</td>
<td>Continued consultations with other donors in the sector. Joint missions and close collaboration to identify</td>
</tr>
</tbody>
</table>
• Delivery Quality  

<table>
<thead>
<tr>
<th>Overall Risk Rating at Preparation</th>
<th>Overall Risk Rating During Implementation</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low (Low Impact/Low Likelihood)</td>
<td>Medium – 1 (High Impact/Low Likelihood)</td>
<td></td>
</tr>
</tbody>
</table>

For newly completed roads, shortage of resources often results in inadequate maintenance of the road carriageway and drainage, which in turn leads to rapid deterioration of the new road, associated increases in travel times and vehicle operating costs, and even the temporary or permanent loss of access in extreme cases.

Management of consultant contracts is inadequate resulting in delays or completion not to specifications.

The risk will be significantly mitigated by handing over roads and bridges completed under the project to the NRA for sustainable maintenance through long-term, performance-based, outsourced maintenance contracts. Although the NRA is still in its infancy and is itself constrained by funding limitations, it is actively expanding its revenue base, which will enable it to take over and maintain an increasing length of national roads.

Project will include capacity strengthening for project management as required, with specific Technical Assistance for this purpose, as under the current RMRP. The WB team will support implementation.
Annex 6: Implementation Support Plan

Procurement

I. Time-based Support

<table>
<thead>
<tr>
<th>Time</th>
<th>Focus</th>
<th>Skills Needed</th>
<th>Resource Estimate (Staff Weeks)</th>
<th>Partner Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>First twelve months</td>
<td><strong>Procurement</strong>&lt;br&gt;Progress on advance procurement actions, and hiring of a firm to provide project management support – Employer’s Project Manager (EPM)&lt;br&gt;Agreement on the procurement monitoring indicators&lt;br&gt;Procurement refresher training for selected Government staff.&lt;br&gt;Conducting of a business opportunities seminar (BOS) with local contractors and suppliers, and initiating an awareness program.&lt;br&gt;Development of baseline on contractor responsiveness&lt;br&gt;Progress on Mitigation Measures Action Plan&lt;br&gt;Review and approval of bi-annual procurement plan update&lt;br&gt;Prior review of 1st ICB works package&lt;br&gt;2 post review missions</td>
<td>Procurement specialist&lt;br&gt;Procurement Hub Leader oversight&lt;br&gt;Procurement specialist for training</td>
<td>6 weeks</td>
<td>Providing technical assistance for the roads sector, which could include fiduciary training.</td>
</tr>
<tr>
<td>Year 2 onwards</td>
<td>Bi-annual procurement progress report (including monitoring indicators) and approval of procurement plan update&lt;br&gt;Progress on Mitigation Measures Action Plan, and revision if necessary</td>
<td>Procurement specialist&lt;br&gt;Procurement Hub Leader oversight</td>
<td>5 weeks</td>
<td></td>
</tr>
</tbody>
</table>
Prior review of transactions as identified in the procurement plan
2 post review missions/year

II. Skills Mix Required

<table>
<thead>
<tr>
<th>Skills Needed</th>
<th>Number of Staff Weeks</th>
<th>Number of Trips</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement specialist (DPS)</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year: 3 (including desk prior reviews) 2&lt;sup&gt;nd&lt;/sup&gt; year onwards: 2 (including desk prior reviews)</td>
<td>2</td>
<td>2/year</td>
</tr>
<tr>
<td>Procurement Hub Leader</td>
<td>0.5/year</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year: 1 2&lt;sup&gt;nd&lt;/sup&gt; year onwards: 2</td>
<td></td>
</tr>
<tr>
<td>Procurement specialist for training</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; year: 0.5</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

III. Partners

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Country</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian Development Bank</td>
<td>ADB</td>
<td>Need for coordination on fiduciary training and capacity building</td>
</tr>
<tr>
<td>AusAID</td>
<td>Australia</td>
<td></td>
</tr>
</tbody>
</table>

Safeguards

I. Time-based Support

<table>
<thead>
<tr>
<th>Time</th>
<th>Focus</th>
<th>Skills Needed</th>
<th>Resource Estimate (Staff Weeks)</th>
<th>Partner Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>First twelve months</td>
<td>Safeguards</td>
<td>Consultant – (Environmental Specialist) Bank – Environmental and Social Safeguards Specialists</td>
<td>3 weeks</td>
<td>DoW staff will attend the training and may provide resource persons. The Department will also require potential contractors to attend the training.</td>
</tr>
<tr>
<td></td>
<td>Implementation of the Safeguards Instruments – Training and Orientation</td>
<td>2 environmental</td>
<td></td>
<td>DoW to hire</td>
</tr>
<tr>
<td>Skills Mix Required</td>
<td>Number of Staff</td>
<td>Number of Trips</td>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------</td>
<td>----------------</td>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>Safeguards Environmental Consultant (Local)</td>
<td>1</td>
<td>1</td>
<td>Assist the DoW and the Bank Safeguards Specialists in the training and orientation of the stakeholders on the Safeguards instruments and WB Safeguards Policies.</td>
<td></td>
</tr>
<tr>
<td>Social Safeguards Specialist</td>
<td>2 / year</td>
<td>2</td>
<td>Supervise the implementation of the LARF and other Social Safeguards concerns</td>
<td></td>
</tr>
<tr>
<td>Environmental Safeguards Specialist</td>
<td>2 / year</td>
<td>2</td>
<td>Supervise the implementation of the ESMF and the individual EMP’s.</td>
<td></td>
</tr>
<tr>
<td>Monitoring and Reporting on Compliance with Safeguards Requirements</td>
<td>4 / year</td>
<td></td>
<td>The Employer’s Project Manager (EPM) will be responsible for monitoring compliance to safeguards requirements by the works contractors.</td>
<td></td>
</tr>
</tbody>
</table>

II. Skills Mix Required

Financial Management
<table>
<thead>
<tr>
<th>Time</th>
<th>Focus</th>
<th>Skills Needed</th>
<th>Resource Estimate (Staff weeks)</th>
<th>Partner Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>First twelve months</td>
<td>Financial management - provide initial training, and ongoing monitoring and support</td>
<td>Financial management</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>12-48 months</td>
<td>Financial management - regular implementation support</td>
<td>Financial management</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

II. Skills Mix Required

<table>
<thead>
<tr>
<th>Skills Needed</th>
<th>Number of Staff Weeks</th>
<th>Number of Trips</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial management</td>
<td>8</td>
<td>8</td>
<td>Staff time includes desk reviews of interim financial reports and audit reports</td>
</tr>
</tbody>
</table>

This implementation support plan will be reviewed on a yearly basis to ensure that it continues to meet the implementation support requirements of the RMRP II.
Annex 7: Team Composition

World Bank staff and consultants who worked on the project:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demetrios Papathanasiou</td>
<td>Task Team Leader</td>
<td>EASNS</td>
</tr>
<tr>
<td>Anil Somani</td>
<td>Consultant Environmental Specialist</td>
<td>EASNS</td>
</tr>
<tr>
<td>Daniel Toga</td>
<td>Team Assistant</td>
<td>EACNF</td>
</tr>
<tr>
<td>Fiona Doube</td>
<td>Team Assistant</td>
<td>EACNF</td>
</tr>
<tr>
<td>Gerardo F. Parco</td>
<td>Operations Officer (Environment)</td>
<td>EASPS</td>
</tr>
<tr>
<td>Hanneke Van Tillburg</td>
<td>Senior Counsel</td>
<td>LEGEN</td>
</tr>
<tr>
<td>Isabella Micali Drossos</td>
<td>Senior Counsel</td>
<td>LEGLA</td>
</tr>
<tr>
<td>John Lowsby</td>
<td>Consultant Transport Specialist</td>
<td>EASNS</td>
</tr>
<tr>
<td>John Nyaga</td>
<td>Senior Financial Management Specialist</td>
<td>EAPFM</td>
</tr>
<tr>
<td>Kylie Coulson</td>
<td>Senior Financial Management Specialist</td>
<td>EAPFM</td>
</tr>
<tr>
<td>Miriam Witana</td>
<td>Procurement Specialist</td>
<td>EAPPR</td>
</tr>
<tr>
<td>Nanda Gasparini</td>
<td>Consultant Social Specialist</td>
<td>EASNS</td>
</tr>
<tr>
<td>Scott Wilkinson</td>
<td>Junior Professional Associate</td>
<td>EASNS</td>
</tr>
<tr>
<td>Shyam KC</td>
<td>Disaster Risk Management Specialist</td>
<td>EASIN</td>
</tr>
<tr>
<td>Stephen Hartung</td>
<td>Financial Management Specialist</td>
<td>EAPFM</td>
</tr>
<tr>
<td>Thao Le Nguyen</td>
<td>Senior Finance Officer</td>
<td>CTRFC</td>
</tr>
</tbody>
</table>