

Transitioning PWD to a More Effective Road Network Manager

Implementation Plan
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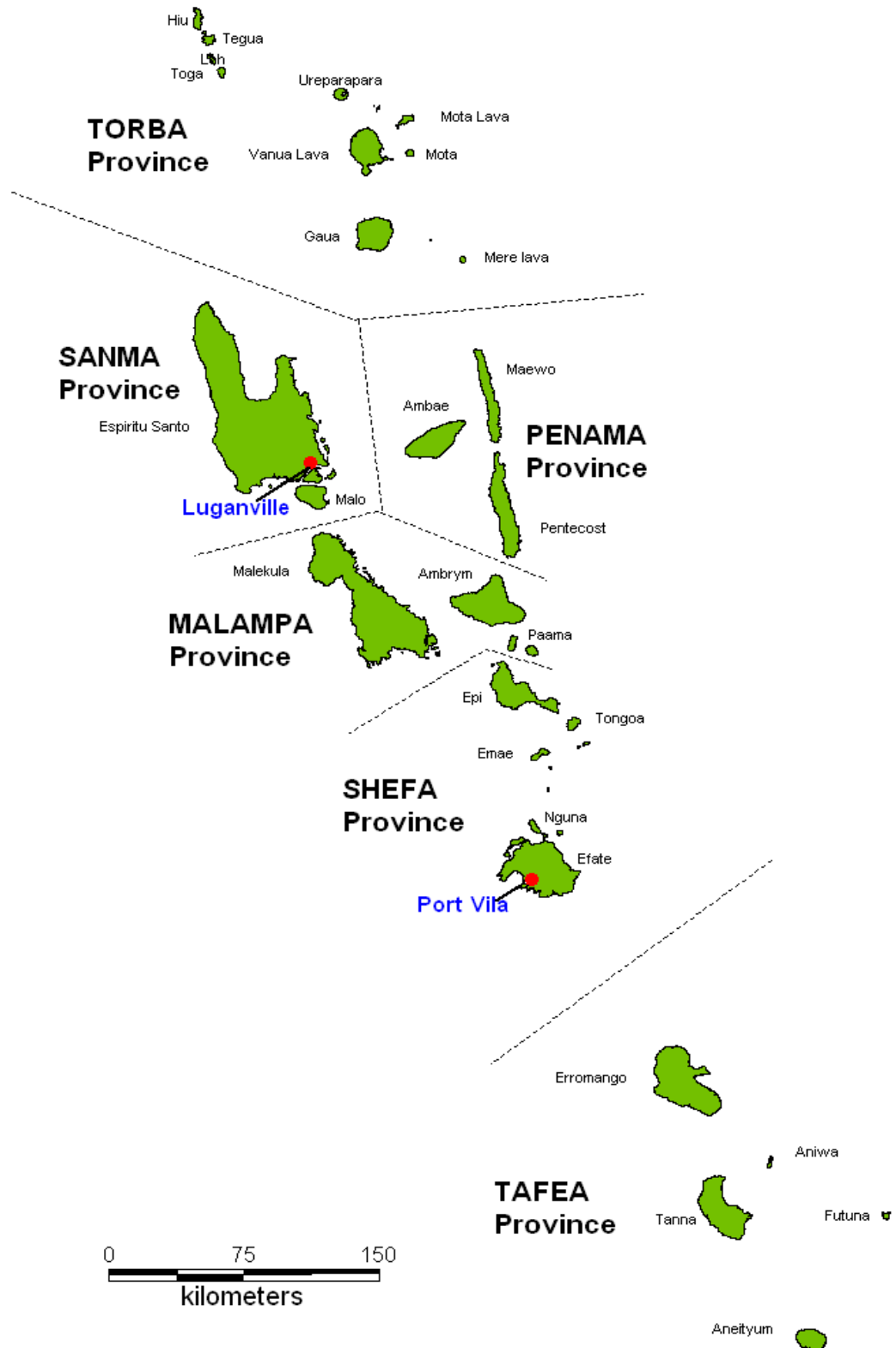
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ACRONYMS AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
ADB	Asian Development Bank
BAS	Budget Allocation System
CBC	Community-Based Contract
COM	Council of Ministers
COTS	Customised Off-the-Shelf (software)
CPO	Community Partnership Officer
CTB	Central Tenders Board
DFAT	Department of Foreign Affairs and Trade
EHC	Equipment Hire Contractor
EOI	Expression of Interest
FA	Force Account
GIS	Geographical Information System
GoA	Government of Australia
GoV	Government of Vanuatu
HDM-4	Highway Design and Maintenance Standards (model), version 4
IBC	Island-Based Contractor
ICC	Island Council of Chiefs
JICA	Japan International Cooperation Agency
kms	kilometres
KPI	Key Performance Indicator
LS	Lump Sum
MFEM	Ministry of Finance and Economic Management
MIPU	Ministry of Infrastructure and Public Utilities
MOT	Ministry of Transport
MYC	multi-year contract
NC	National Contractor
PBM	Performance-Based Maintenance
PBMC	Performance-Based Maintenance Contract
PMP	Performance Maintenance Period
PS	Provisional Sum
PWD	Public Works Department
R4D	Roads for Development (previously Vanuatu Transport Sector Support Program)
RAI	Rural Access Index
RAMS	Road Asset Management System
RFQ	Request for Quotation
RFT	Request for Tender
RIMS	Road Inventory Management System
RRAP	Rural Roads Access Policy
SI	Site Inspector
TBE	Tractor-Based Equipment
TBPET	Tractor-Based Plant and Equipment Trial
TIMF	Transport Infrastructure Maintenance Fund
VfM	value for money
VIRIP	Vanuatu Infrastructure Reconstruction and Improvement Project
WB	World Bank

MAP OF VANUATU





THE PLAN IN SUMMARY

- This report sets out a plan for the Public Works Department's (PWD's) intended transition to a network manager that relies largely on outsourcing to meet targets for the serviceability of the road network as a whole. This plan is based on the proposals outlined in a June 2017 Concept Note¹.
- Maintenance by force account (FA) is more expensive than by contractor, reinforcing the justification for PWD's continuing shift towards the outsourced model. The transition to a network manager will require a further shift from delivering individual projects to delivering a network that meets broader priorities like those in the Rural Roads Access Policy (RRAP), with performance risk transferred to those best able to manage it.
- The implementation steps and suggested timetables include:
 - Step 1: A redeployment of FA resources to concentrate only on areas where private-sector capability does not yet exist or competition is limited;
 - Step 2: The trial introduction of a new agreement making contractors, rather than PWD, responsible for involving and managing community labour (community participation is a strong feature of the RRAP) and incorporating performance incentives;
 - Step 3: The preparation and procurement of a pilot, multi-year, performance-based maintenance contract (PBMC) to test and demonstrate the model's suitability for PWD as network manager; and
 - Step 4: The development and operation of a road network asset management system (RAMS), including associated survey procedures, with committed, long-term donor support guaranteeing the quality and functionality of the system until PWD is able to manage this itself.
- The report also outlines, and explains how to handle, some of the institutional changes that will be necessitated by the shift to a network manager.

¹ Roads for Development (R4D), *Transitioning PWD to a More Effective Road Network Manager*, Concept Note, June 2017.



Roads for Development (R4D)

TRANSITIONING PWD TO A MORE EFFECTIVE ROAD NETWORK MANAGER

IMPLEMENTATION PLAN

1. Introduction

The Concept Note

In June 2017, a Concept Note² outlined the Public Works Department's (PWD's) intended transition to a more performance-focused organisation – a network manager – that relies largely on outsourcing to meet targets for the serviceability of the whole network. The Note found that maintenance by force account (FA) was significantly more expensive than by contractor, reinforcing the justification for PWD's continuing shift towards an outsourced model. The transition to a network manager will require a further shift from delivering individual projects to delivering a network that meets broader priorities like those in the Rural Roads Access Policy (RRAP), with performance risk transferred to those best able to manage it. The Note recommended a redeployment of FA resources to concentrate only on areas where private-sector capability does not yet exist or competition is limited; the trial introduction of a new agreement making contractors, rather than PWD, responsible for involving and managing community labour (community participation is a strong feature of the RRAP) and incorporating performance incentives; the preparation and procurement of a pilot, multi-year, performance-based maintenance contract (PBMC) to test and demonstrate the model's suitability for PWD as network manager; and the development and operation of a road network asset management system (RAMS), including associated survey procedures, with committed, long-term donor support guaranteeing the quality and functionality of the system until PWD is able to manage this itself.

Implementing the Concept

This present report sets out a plan for implementing these proposals. After summarising the transition steps proposed in the Concept Note, it sets out time-bound actions for implementing each of the Note's key initiatives. In addition to providing guidance to PWD's coming business plan and possible restructuring, this might be useful in the design of R4D's follow-up activity, due to start in 2018³.

² Roads for Development (R4D), *Transitioning PWD to a More Effective Road Network Manager*, Concept Note, June 2017.

³ R4D is a multi-year infrastructure facility supported by Australia's Department of Foreign Affairs and Trade (DFAT).

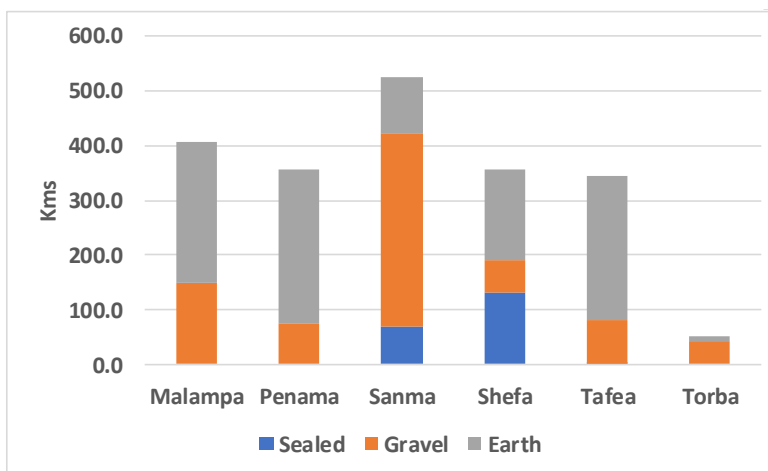
2. Transitioning PWD to a Network Manager

PWD's Network

PWD is responsible for maintaining just over 2,000 kms of core network roads⁴, of which less than half have seal or gravel surfaces. Except for a stretch of 300m in Tafea (Tanna), sealed roads are limited to Sanma (Santo) and Shefa (Efate) (Figure 1).

Maintenance of the network is managed by PWD's six Divisions, one in each province, through a mix of FA, agreements with National Contractors (NCs) and Island-Based Contractors (IBCs), and Community-Based Contracts (CBCs) with roadside communities, the last of which mainly cover

Figure 1: Vanuatu Road Network, 2017



labour-intensive vegetation control.

The Role of Network Manager

Changing PWD's role from a conventional public works model to a network manager will require changes in structure, capacity and skills. Figure 2 illustrates the differences in approach. Under the old model, PWD's focus has been on executing contracts

within assigned budgets. As network manager, it will focus on meeting targets for the standard, availability and quality of the whole network. Its reporting will emphasise the improvements in network serviceability achieved by its maintenance strategies, rather than the number of contracts successfully completed and the amount of money spent on them.

A key change will be in how PWD accounts for its performance. As network manager, it will set target performance measures (in terms of network standard, availability and quality) and report on how its expenditures help achieve them at least cost. This will require it to maintain up-to-date information on the condition of all links and structures in the core network, and an ability to determine the optimum mix of maintenance treatments (routine, periodic and rehabilitation) required to achieve the targets. Maintenance delivery would eventually be by contractors (whether IBC, NC or PBMC⁵) who are incentivised by agreements holding them accountable for network performance rather than units of input. This is a radical change from present arrangements, and needs to be handled carefully; the steps are covered in this report.

Possible Stepping-Stone to Corporatisation

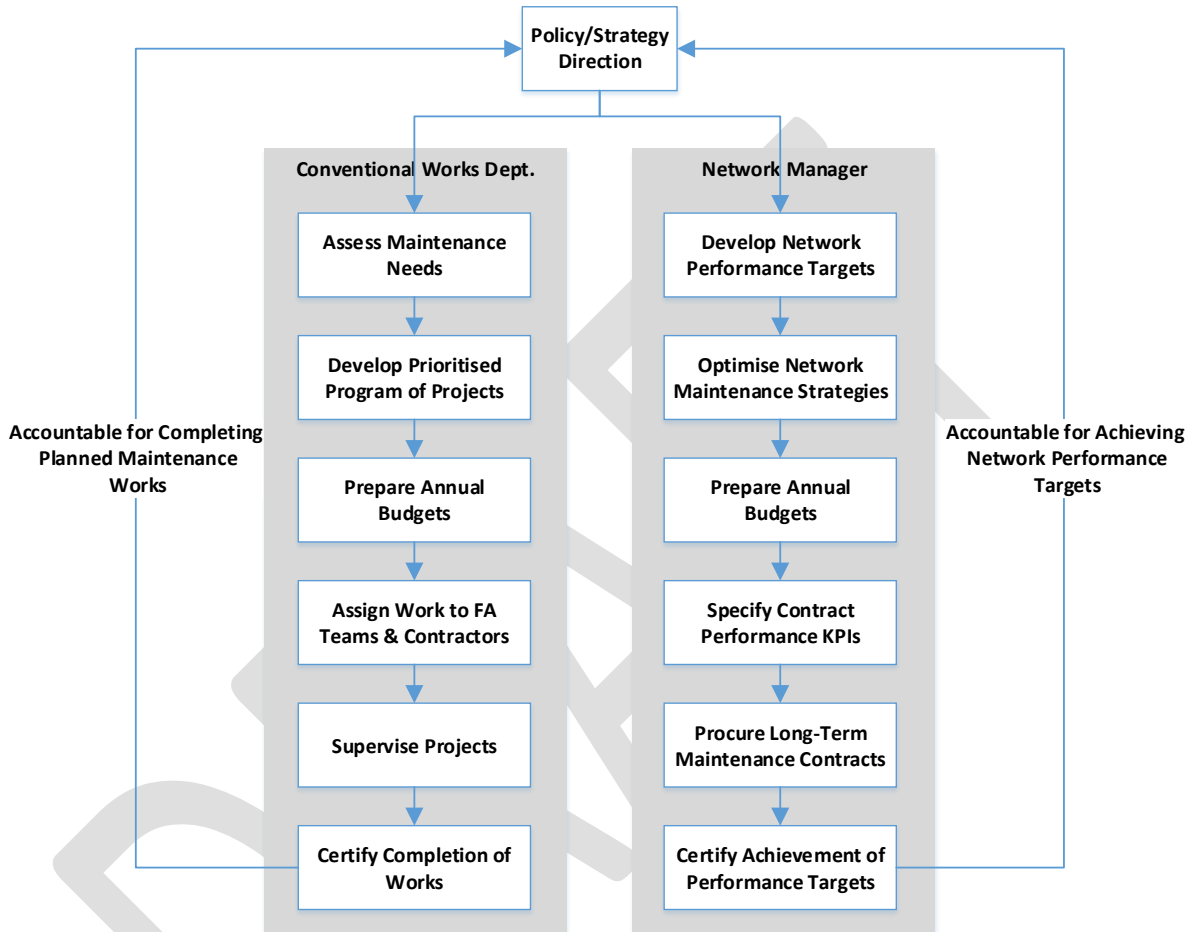
A network manager acts on behalf of the Government and has an arm's-length relationship with construction and maintenance service-providers through formal contracts. The model lends itself to

⁴ PWD is the only road maintenance provider, and it often gets asked to do informal work on other village roads through exceptional requests.

⁵ PBMC = Performance-Based Maintenance Contract. Under a PBMC, the contractor is committed to meeting specified road quality or performance standards for the duration of the contract (usually at least three years, preferably more), and receives deductions from regular payments and other penalties if those standards fail to be met.

eventual corporatisation, with the network manager itself at arm's length from Government, held accountable for its own performance in managing the network as a corporate entity. Such an entity would have a degree of financial autonomy if it were empowered to levy user charges to cover its costs, a topic touched on in Chapter 7. The additional step of corporatisation is not covered by this report⁶, but remains a longer-term option that aligns with current thinking in PWD's parent Ministry of Infrastructure and Public Utilities (MIPU).

Figure 2: Differences between a Conventional Works Department and a Network Manager

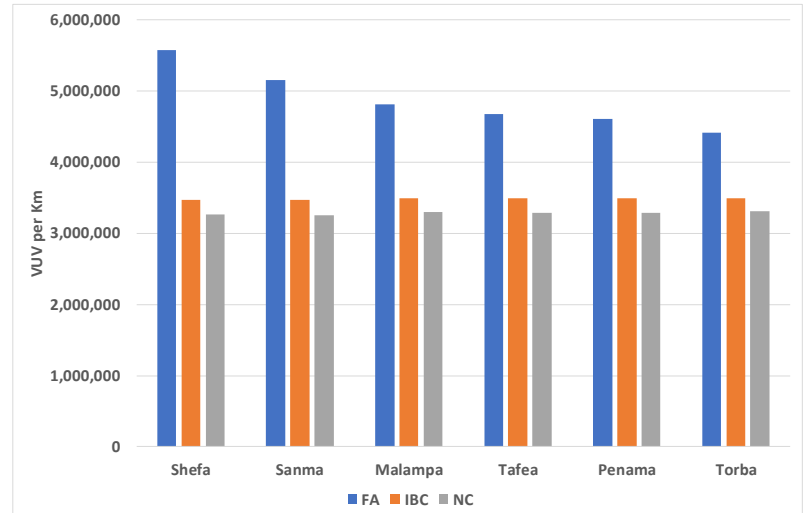


⁶ A study of road user cost recovery may soon be carried out under TA-9331 REG, funded by the Asian Development Bank (ADB).

Shifting to Outsourced Delivery

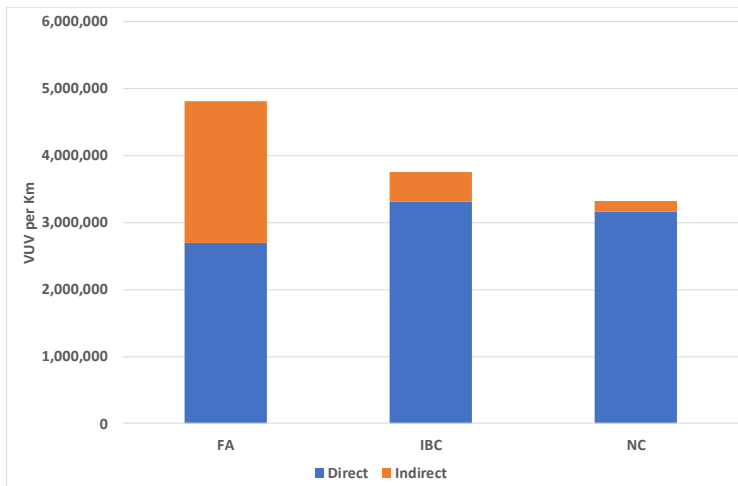
The Concept Note reviewed the cost-effectiveness of current arrangements for maintenance involving FA, CBCs and procurement through IBCs and NCs. It found that PWD's reliance on work allocation rather than competitive tender has advantages for Vanuatu's isolated islands and networks, but that a progressive shift from specifying inputs to measuring outcomes would be needed if it were to be accountable for network, rather than project, performance. PWD has already made progress towards an outsourced model: FA is expected to deliver only 14.6% by value of the maintenance works planned for 2017, down from 63% in 2013. The cost comparison shows that periodic maintenance of gravel roads by FA, which accounts for 84% of FA activity, is significantly more expensive than

Figure 4: Delivery Costs for Periodic Maintenance of Gravel Roads, 2017



by contract (Figure 4): on average, 28% more than by IBC and 45% more than by NC. This is because the indirect costs of delivering by FA (the costs of divisional support staff, office support, repairs, and depreciation of plant and equipment) outweigh any small advantage in direct costs alone

Figure 3: Average Composition of Costs for Periodic Maintenance of Gravel Roads, 2017



and depreciation of plant and equipment) outweigh any small advantage in direct costs alone (Figure 3). Indirect overheads make up 44% of total FA costs, but only 5% of costs by NC.

PWD's work plan for 2017 envisages the six divisions administering as many as 344 individual contracts or work assignments on the rural network: 239 CBCs (the number has mushroomed since 2015), 63 IBC agreements, 27 with NCs and 15 FA team assignments. This will test their capacity to ensure quality and compliance. The number could

probably be reduced to little more than a dozen if a few competent contractors (with inputs by IBCs and local communities) could be made accountable for the performance (access, condition) of larger networks rather than the many contractors and community groups that now provide bill-of-quantity (BoQ) inputs over relatively small sections of road.



Performance-Based Maintenance

Performance-based maintenance (PBM) has not yet been tried in Vanuatu, but is common elsewhere⁷. A PBM contract commits the contractor to meeting specified road condition standards throughout the contract period (usually a minimum of 3-5 years for unsealed roads, longer for sealed roads⁸). For this, he receives regular payments. His performance is monitored periodically. Payment deductions are made if those standards fail to be met.

PBM contracts have advantages for a network manager. The focus is on outcomes (network conditions) and not inputs. The network manager deals with one contractor per island or sub-network, not numerous separate IBCs and/or CBCs. The contractor has autonomy over how to manage resources (including local labour) to meet the required performance conditions – thus, risks (such as poorly-specified materials or poor workmanship) are managed by the party best able to control them⁹. The contractor's incentives are aligned with the objectives of the network manager: he is rewarded for good-quality work that minimises road deterioration and penalised for bad. And provided the contractor's network is large enough, they encourage him to invest in equipment, materials and training to improve quality and productivity.

There are also disadvantages in Vanuatu's context. Until the model is well-established, it will be difficult for local contractors to anticipate risks and price bids to guarantee outcomes over a 3-5-year period or longer without outside assistance¹⁰. For roads in poor condition, some rehabilitation work usually needs to be done to bring them to a maintainable state – but this can be included in hybrid contracts and paid for at agreed rates on a BoQ basis. Key performance indicators (KPIs), against which performance is measured, need to be simple and easily measured, and verification needs to be done objectively by a party that is trusted by both network manager and contractor. Competition in the procurement process usually achieves best value for money (VfM); there must be enough competent, competitive bidders, and they should be given enough time to assess resource requirements and price risk. But introducing PBMs in Vanuatu would disrupt established arrangements involving the allocation of work among CBCs and IBCs unless a continuation of such arrangements were prescribed as a condition of the PBM contract. And, last but not far from least, two important government regulations would need to be changed: the current VUV 5 million threshold requiring larger government-funded contracts to be referred to the Central Tenders Board (CTB), which can add 6-9 months in procurement delay (even for maintenance projects), and restrictions on multi-year contracts for government-funded projects.

PWD's strategy is to consider PBMs only where the contract duration and the extent of sub-network are large enough to warrant the commitment of resources required to achieve the expected efficiency and quality gains – and when procurement and budgeting regulations allow. The Concept Note recommends that the approach should be carefully introduced and managed as a

⁷ See, for example: <http://www.performance-based-road-contracts.com/>.

⁸ The reason for 3-5 years (and a decent length of network, too) is to encourage the contractor to invest in plant, material and training to help guarantee meeting contract performance standards.

⁹ PWD currently specifies inputs in detail; that's what's always done for conventional contracts. In doing so, it takes on risks and reduces the performance incentive: how can the contractor guarantee output performance if key inputs are closely proscribed? As network manager, PWD will need to learn how to specify *outcomes*, not inputs, and to allow the contractor leeway in deciding how best to meet them.

¹⁰ Where this is the case, PWD (with technical assistance, if necessary) could hold pre-bid briefings to explain the risks and how to price and manage them, and could hand-hold the successful bidder through the implementation process, with training also provided to other contractors.



pilot, to demonstrate to Government and the industry how PBMCs work, with revisions made to the rules governing procurement and multi-year budgeting. More about this in Chapters 4 and 5.

Community Participation

Many communities depend on work assigned under CBCs, and the sense of obligation to maintain local roads is a positive feature that should be encouraged; it also aligns with RRAP objectives. But CBCs are difficult to administer and control: they each cover only very short sections of road (typically only 1-2 km), and require many village-level agreements, extensive community consultations, occasional dispute resolution, and output verification and payment. 239 separate community contracts are expected in 2017.

Payments to unskilled workers help raise community welfare¹¹, and can be considered a benefit of the CBC approach. They are greater for CBCs than for contracted operations that are more equipment-intensive and employ fewer local workers. If account were taken of the benefits of unskilled labour payments, CBCs would be more cost-competitive (but not necessarily least-cost), especially in the outer islands where FA and more formal contractors have difficulty mobilising.

The Role of the Respective Delivery Models

Based on its cost comparisons, the Concept Note proposed the following guidelines for the role of the respective maintenance delivery models:

- For **routine** maintenance of **gravel** roads, the preferred choice based on cost would be to use NCs. But NCs are not attracted to outer islands or small contracts of short duration. Where NCs are unavailable, or find routine maintenance unattractive, the choice lies between FA and IBC. With FA already limited in coverage and capacity by equipment constraints, IBC is preferred. FA capabilities should be reserved for places where IBC/NC capability is unavailable.
- For **periodic** maintenance of **gravel** roads, outsourcing is the preferred option, whether by IBC where NC capability does not exist, or NC where it does. Again, FA should be reserved for places where neither are available¹².
- For **routine** maintenance of **sealed** roads, outsourcing is preferred, usually (on Sanma and Shefa) through NCs. FA does not have the equipment to sustain a maintenance program for sealed roads, nor is it likely to be cost-competitive.
- For **periodic** maintenance of **sealed** roads, which only exist at present on Sanma and Shefa, outsourcing to NCs is the only viable option. It makes little sense to scale up a capacity within PWD for what is only an intermittent task.

The PWD Transition Strategy

Allocating and Managing Risk

PWD's divisions administer numerous small contracts: in 2017, some 344 individual work assignments (239 CBC agreements, 63 IBC agreements, 27 NC contracts and 15 FA team assignments). Given their resources, this is almost impossible to manage effectively. Under the

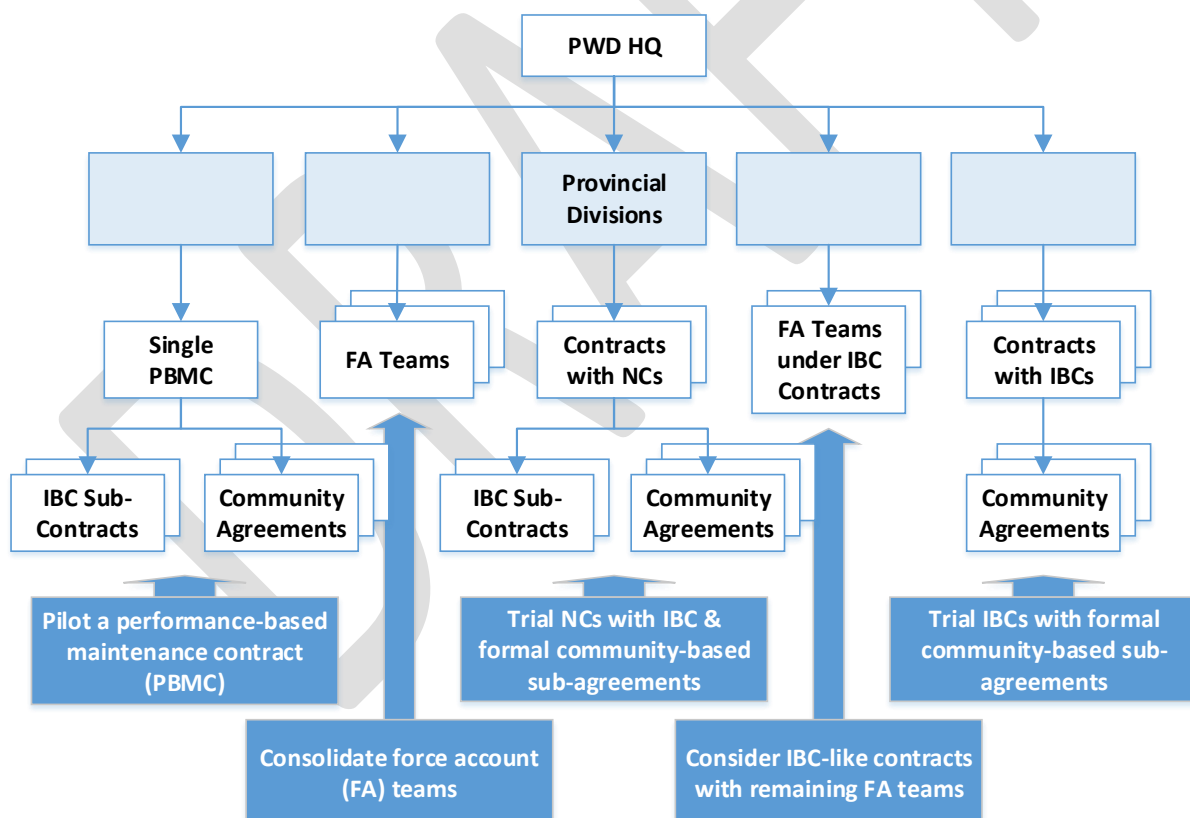
¹¹ Increased cash incomes enable improvements in diet, health and children's education, the purchase of tools and utensils, and/or investments in other social infrastructure. These do not follow from payments to contractors for equipment and materials. As of 31 March 2017, 124,904 workdays had been created under CBC agreements since the start of R4D Phase II, with total community payments amounting to VUV 149.9 million.

¹² The Concept Note suggested that periodic maintenance ought to give greater attention to flood protection and drainage. Even non-engineered roads could provide good service if damage from flooding was reduced by installing culverts and other cross-drains under periodic maintenance contracts or through FA.

Concept Note’s proposals, they will eventually manage only a dozen or so, generally only a couple each, with PBMCs taking responsibility for meeting performance standards over island-sized networks and with communities engaged under CBC-like sub-agreements that are monitored for compliance with social safeguards. This will likely take several years to achieve. In the meantime, the transition will involve several key initiatives (Figure 5):

- redeploying FA resources to concentrate only on areas where private-sector capability does not yet exist or where competition is limited¹³, and rationalising and reforming PWD’s plant and equipment pool, including the tractor-based equipment (TBE) procured under R4D, to wind down its reliance on PWD’s budget and transform it into a commercially-focused equipment-hire operation instead – Step 1, starting on page 9;
- the introduction – initially on a pilot basis – of a new form of contract for IBCs and NCs that mandates (and subsequently monitors) formal community-based sub-agreements for labour-intensive work and incorporates performance-based incentives and penalties – Step 2, starting on page 17; and
- the preparation and implementation of a pilot, multi-year, PBMC, probably on Efate or Santo, to demonstrate how network performance incentives and penalties work and to test the model’s suitability for PWD as network manager – Step 3, starting on page 29.

Figure 5: Transition Steps



The underlying principle is to manage risk more effectively. Ultimately, the risks of failing to meet performance standards, time/cost overruns, and poor materials and workmanship will be borne by the contractor. PWD’s role, exercised through its divisions, would only be to verify that specified

¹³ The Note also suggests the possibility of assigning tasks to remaining FA teams under IBC-like agreements as a further option in the outsourcing strategy.



network performance standards continue to be met. This is much easier than supervising 344 individual contracts. It doesn't even involve checking that the right amount of material has been laid, or that drains are clean, or that vegetation has been cleared: that would be the responsibility of the contractor who, if he failed to ensure that these were done effectively and the road became flooded, damaged or impassable, would suffer penalties. During the transition period, however, reforms will be introduced incrementally before rolling out throughout the country, to test their effectiveness, allow the approach to be adjusted, and provide a demonstration of good practice.

Output Performance

Ultimately, when PBMCs are maintaining sub-networks to availability and quality KPIs, PWD's task will be simple: to verify that the KPIs are being achieved for the dozen or so PBMCs they administer. The KPIs will depend on PWD's network-management objectives (like its access objective under the RRAP) and the techniques available to verify compliance, but would likely include (i) the proportion of the network that is trafficable all year round, and (ii) the proportion of the network that has a road roughness of a given level or below. These KPIs are discussed further in Chapters 4 and 5.

Managing Information

A successful network manager uses information to prioritise treatments and report on network performance. Currently, PWD cannot show how effective it is in ensuring the functioning of its network: it doesn't have the data on road conditions to do so. As network manager, it will routinely survey road conditions and traffic, and will be able to demonstrate graphically¹⁴ the justification for its spending on road maintenance, the location of works that are planned or being carried out, the impact of its programs on the availability and condition of the network, and whether it has met its network performance KPIs.

Coupled with the output-based incentives, it will also be able to use this information to pressure PBMCs to meet the same performance targets. In Chapter 6, recommendations are made – Step 4 on page 33 – for R4D and its successor facility to develop and maintain a road asset management system (RAMS), and to be accountable over several years for using it to prioritise maintenance spending and monitor network performance until PWD establishes its own capability to do so.

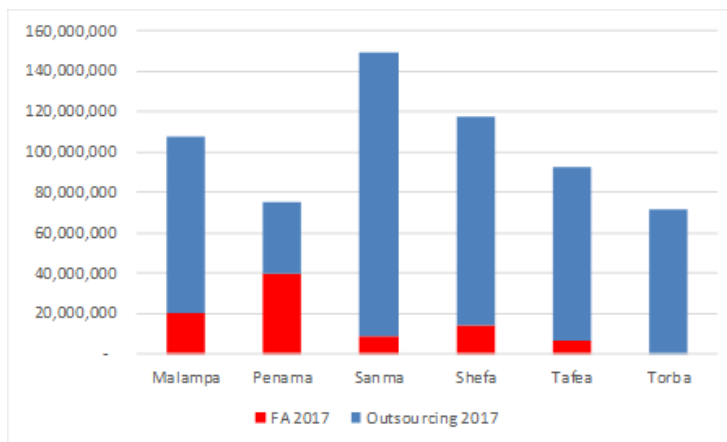
¹⁴ Under this Note's proposals, anyone, from the Minister to an interested member of the public, would be able to view online the condition of any part of the network, PWD's plans for maintaining it, and the degree to which PWD's KPIs are being achieved, all presented graphically using GIS (Geographic Information System) software.

3. Step 1: Redeploying Force Account Resources

Background

The value of works by FA is much smaller than by contractors and CBCs (Figure 6) and is declining rapidly. Only in Penama does it have the major share (52%). 84% by value of FA's work comprises periodic maintenance (Figure 7): mainly reshaping and resurfacing gravel roads, and some drainage and emergency repairs. For this it competes with NCs (in the sense that NCs are also capable of doing the work) on the main islands and IBCs on the smaller islands where contracts are smaller.

Figure 6: FA versus Outsourcing by Value of Work, 2017

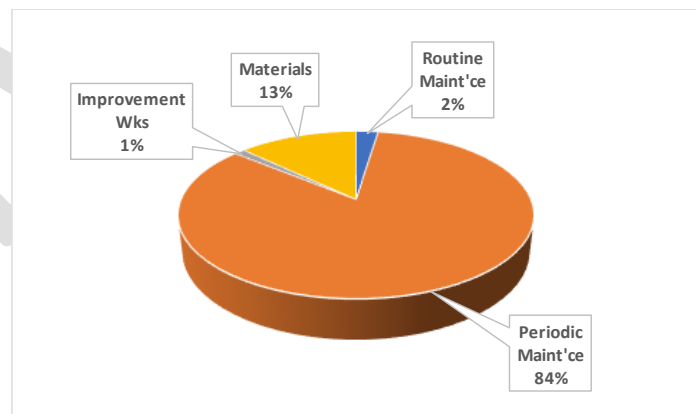


NCs and IBCs are active in Shefa and Sanma: 17 contracts (5 IBC, 12 NC) under PWD's 2017 program in Shefa, and 16 contracts (7 IBC and 9 NC) in Sanma. There are 8 IBCs in Penama, 21 in Torba, 12 (and 3 NCs) in Malampa and 10 (and 3 NCs) in Tafea. Yet, except in Torba, FA teams

also work in all these provinces, where they fail to provide maintenance services that are cost-competitive with IBCs and NCs.

Penama has the largest fleet of operational PWD equipment (13 items), including the only grader in the country, and is one of two provinces where R4D's Tractor-Based Equipment Trial (TBPET) is operating (the other is Tafea, which has little else). Five of the six provinces have operational rollers (not very useful without a grader), but most other equipment is non-operational or does not make up a full work-team complement for periodic maintenance. The availability and reliability of equipment are the most significant factors impacting on the productivity of FA operations. Only 38% of all major items, (i.e., excluding pick-ups, quad bikes and motorcycles) are considered to be operational (Table 1).

Figure 7: FA Works by Activity, 2017



Some equipment is over 30 years old, well beyond its normal useful economic life, where the cost of repairs and maintenance far outweighs the cost of purchasing new equipment requiring less maintenance over say a 10-year period.

Table 1: PWD Equipment, by Province and Condition, 2017

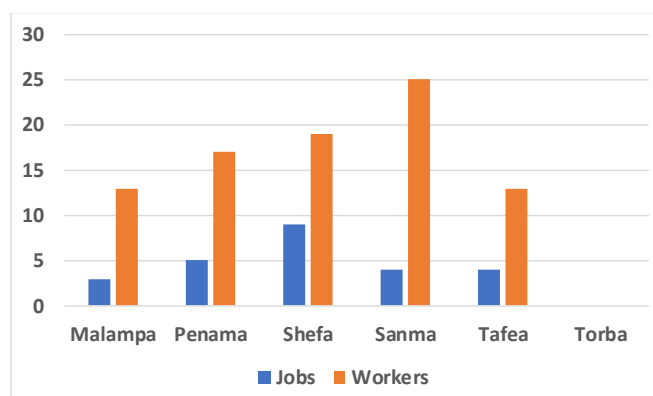
Equipment	Condition	Shefa	Sanma	Malampa	Tafea	Penama	Torba	Total	% Optl
Bulldozer	Operational			1		1		2	33.3%
	Non-operational				2		2	4	
Grader	Operational					1		1	12.5%
	Non-operational	2	2	1	1	1		7	
Loader	Operational					1		1	14.3%
	Non-operational	1	2	1		1	1	6	
Excavator	Operational					1		1	50.0%
	Non-operational					1		1	
Backhoe	Operational		1					1	14.3%
	Non-operational	2	1	1	1	1		6	
Roller	Operational	1	1	2	3	2		9	90.0%
	Non-operational				1			1	
Tractor	Operational				4	3	1	8	72.7%
	Non-operational		1	1		1		3	
Tipper truck	Operational	2	2			3		7	33.3%
	Non-operational	3	2	3	2	2	2	14	
Water truck	Operational					1		1	25.0%
	Non-operational	1	1	1				3	
Crane truck	Operational							0	0.0%
	Non-operational	1						1	
Cargo truck	Operational							0	0.0%
	Non-operational	1	1					2	
Seal truck	Operational							0	0.0%
	Non-operational	1						1	
Prime mover	Operational							0	0.0%
	Non-operational	1						1	
All	Operational	3	4	3	7	13	1	31	38.3%
	Non-operational	13	10	8	7	7	5	50	
	% operational	18.8%	28.6%	27.3%	50.0%	65.0%	16.7%	38.3%	

Note: Operational = good working condition
 Non-operational = requiring frequent repairs or warranting disposal
 Excludes pick-ups, quad bikes and motorcycles

An estimated 87 field personnel are engaged on 15 FA projects in 2017¹⁵: 13 in Malampa, 17 in Penama, 19 in Shefa, 25 in Sanma and 13 in Tafea. PWD support staff and casual labour are in addition. It is not known how many work in their home province. Nor is information available on the level of training received by PWD field staff, but most have direct experience of periodic maintenance operations working under PWD divisional supervision.

From divisional quarterly progress reports in June 2017, FA teams appear consistently slower than contractors to meet work plan targets, despite having no requirement for time-consuming procurement (Figure 9). The main

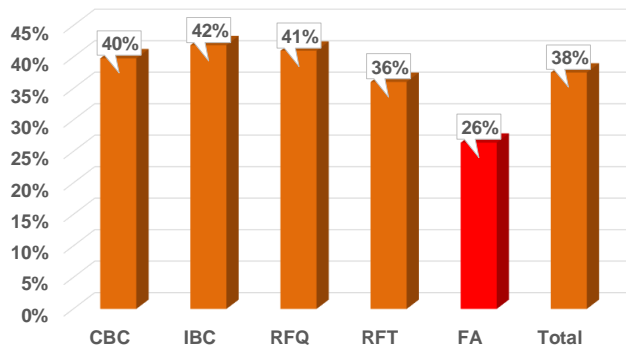
Figure 8: FA Jobs and Personnel by Province, 2017



¹⁵ This is a rough estimate from the 2017 payroll budget, and should be checked against personnel records.

reasons are the lack of incentive to work more productively¹⁶, an inability to put together full sets of equipment, and frequent equipment failures with long waiting times for spare parts (in turn, reflecting bureaucratic procedures and inadequate budgets for stocking spares).

Figure 9: Physical Work Progress, by Type of Delivery, End-June 2017



In 2014, PWD established two main plant workshops in Luganville (for the Northern Plant Management Region) and Port Vila (for the Southern one) where larger repairs and rebuilds are carried out. Servicemen/operators have responsibility for minor repairs and day-to-day maintenance in the islands, where workshop tools and equipment are basic. The workshops are not effective in

maintaining an operational fleet. Stocks of tools and spares are low. And most workshop staff are close to retirement and poorly-trained in maintaining newer models of equipment.

As a trial, in 2017, PWD have assembled a FA “A-Team” in Maewo (Penama), pooling one full set of new equipment and the best operators into a single team. They are deployed to quarrying and re-graveling sections of the western coast road. Early indications are that this team are meeting output targets and producing good-quality work. PWD should continue with this trial in 2018 as a control against which to measure the performance of other FA strategies which are developed.

Objectives of Redeployment

Under the network-manager model, FA would have a limited role. As the Concept Note has shown, it is not cost-competitive with outsourced delivery. Its role should be limited to providing maintenance services where there exists no competitive private-sector market. This means:

- consolidating resources (staff, equipment and workshops) to establish a reliable capability in provinces where IBC/NC competition is limited or does not exist; and
- introducing incentives to raise output quality and achieve higher rates of productivity for both staff and equipment.

Redeployment Strategy

Consolidation of FA Operations

Without a commercial incentive to carry out effective plant maintenance and maximise productivity, the most sensible long-term strategy for FA equipment would be to dispose of non-operational items and to sell working items to equipment-hire companies (EHCs) who do have such incentives¹⁷. Because EHCs have the incentive to achieve

Box 1: External Tasks

It is very common for FA resources to be diverted to carry out work for external parties. Sometimes this is used as an argument to keep them available. But this diverts resources away from road maintenance and increases the costs of equipment repairs. It would be better if equipment, whoever needs it, is hired from EHCs.

¹⁶ Work often halts when a grader operator, for example, takes leave without notice.

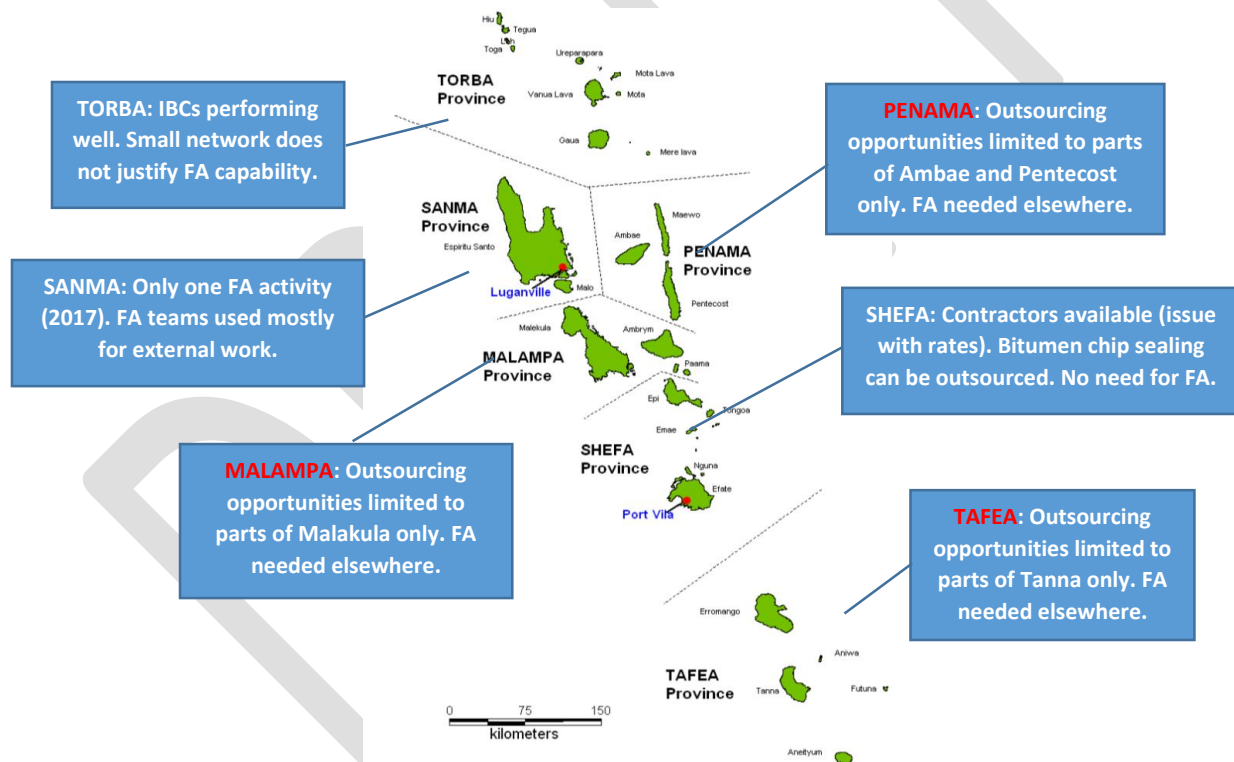
¹⁷ An IBC Tracer Study by VTSSP in 2014 found that 67% of IBCs would not hire from the PWD due to PWD’s inability to provide serviceable equipment at the right time, the need to compete with other contractors for the limited equipment available, the cost of hiring, and the inconvenience and cost of transport.

higher utilisation, hire rates should be lower than PWD’s current total costs of operation, maintenance, repairs and depreciation.

The economies of plant hire were illustrated by VTSSP (R4D’s predecessor) in 2014¹⁸. Then, the cost of a new 14-ton grader in Port Vila was VUV 28.7 million, including VAT. Maintenance costs over an 8-year working life were estimated to be VUV 22.96 million, and fuel costs and operator wages at VUV 7.58 million and VUV 9.98 million respectively, bringing the total cost over 8 years to VUV 69.2 million. The same grader was available for hire in Port Villa at VUV 14,000 per hour, complete with fuel and operator. At PWD’s typical 550 hours per year of annual usage, the hired grader would cost VUV 7.7 million per year, or VUV 61.6 million over 8 years, a saving of VUV 7.6 million over the purchase option.

In the interim, however, to raise the productivity of existing operational equipment, full complements of working equipment – like the Maewo “A-Team”, should be assembled in provinces and islands where no private-sector capability exists. In line with this, at a workshop with Divisional heads in June 2017, PWD determined that Penama, Malampa and Tafea should be the focus of FA operations (Figure 10).

Figure 10: FA Redeployment Considerations



Supporting this decision, R4D reviewed FA equipment requirements over the coming five years based on forecasts of the annual maintenance task, assumptions (consistent with the Concept Note’s proposals) about the FA/outsourcing split and the productivity of FA equipment, and estimates of the team-days needed to cope with the annual FA maintenance task (Table 2). Using further assumptions about the remaining life of existing equipment and the potential for sharing between provinces when utilisation rates allowed, it estimated the items of existing operational equipment (after allowing for life-expired disposals) and new purchases that will be needed to carry the forecast workload in Penama, Malampa and Tafea. These are shown in Table 3. In addition to 12

¹⁸ Long Term Development Strategy for Heavy Plant and Equipment, VTSSP, 2014



heavy items from the existing fleet expected to remain operational in 2022, 18 new items would need to be purchased, listed in the last column of Table 3.

Table 2: Estimated FA Resources Needed, 2022

Province	Island	Network Kms			Annual Kms Needing Treatment				% Outsourced				Team-Days of FA Work Needed/Cycle			
		Sealed	Gravel	In-situ	SP	LG1	RS3	EW	SP	LG1	RS3	EW	SP	LG1	RS3	EW
Penama	Ambae	0.0	32.6	115.3	57.6	72.2	9.8	147.9	50%	30%	20%	0%	10.8	30.7	47.5	6.4
	Pentecost	0.0	41.7	132.8	132.8	108.1	13.9	174.5	30%	20%	20%	0%	25.0	46.6	67.5	7.8
	Maewo	0.0	0.0	32.9	32.9	16.5	0.0	32.9	0%	0%	0%	0%	6.2	5.6	0.0	0.9
	All Penama	0.0	74.3	281.0	223.3	196.7	23.7	355.3					42.0	83.0	115.0	15.0
Malampa	Ambrym	0.0	0.0	102.0	61.2	20.4	0.0	147.9	0%	0%	0%	0%	19.9	13.9	0.0	6.4
	Malakula	0.0	150.1	132.0	79.2	88.3	20.0	174.5	50%	20%	30%	0%	25.7	115.0	113.0	7.8
	Paama	0.0	0.0	22.7	13.6	4.5	0.0	32.9	0%	0%	0%	0%	4.4	3.1	0.0	0.9
	All Malampa	0.0	150.1	256.7	154.0	113.2	20.0	355.3					50.0	132.0	113.0	15.0
Tafea	Tanna	0.0	55.3	118.0	0.0	61.5	15.7	147.9	50%	30%	15%	0%	0.0	66.1	88.4	6.4
	Erromango	0.0	22.1	97.0	48.5	54.8	7.4	174.5	0%	0%	0%	0%	14.0	51.9	41.6	7.8
	All Tafea	0.0	77.4	215.0	48.5	116.3	23.0	322.4					14.0	118.0	130.0	14.1
Sanma	Aore	0.0	0.0	33.0	16.5	11.6	0.0	147.9	50%	30%	15%	0%	2.9	6.9	0.0	4.2
	Espiritu Santo	68.0	300.5	24.0	24.0	312.5	100.2	174.5	0%	0%	0%	0%	4.1	530.2	349.0	5.2
	Malo	0.0	53.4	40.5	40.5	73.7	17.8	32.9	0%	0%	0%	0%	7.0	105.0	62.0	0.6
	All Sanma	68.0	353.9	97.5	81.0	397.7	118.0	355.3					14.0	642.0	411.0	10.0
Shefa	Efate	128.9	61.5	7.3	3.7	45.6	17.4	147.9	50%	30%	15%	0%	0.4	76.5	61.0	4.2
	Epi	0.0	0.0	70.3	70.3	35.2	0.0	174.5	0%	0%	0%	0%	8.5	20.5	0.0	5.2
	Tongoa	0.0	0.0	41.3	41.3	20.7	0.0	32.9	0%	0%	0%	0%	5.0	12.0	0.0	0.6
	All Shefa	128.9	61.5	118.9	115.3	101.4	17.4	355.3					14.0	109.0	61.0	10.0
Torba	Gaua	0.0	15.0	0.0	0.0	10.5	4.3	147.9	50%	30%	15%	0%	0.0	18.4	15.0	4.2
	Mota Lava	0.0	14.0	0.0	0.0	14.0	4.7	174.5	0%	0%	0%	0%	0.0	24.5	16.5	5.2
	Vanua Lava	0.0	13.2	9.4	9.4	17.9	4.4	32.9	0%	0%	0%	0%	14.0	26.1	15.5	0.6
	All Torba	0.0	42.2	9.4	9.4	42.4	13.3	355.3					14.0	69.0	47.0	10.0
Totals:		196.9	759.4	978.5												

Notes: SP = stockpiling/materials for IBC, LG1 = light grading (gravel) every 1yr, RS3 = resheeting (gravel) every 3yrs, EW = emergency works

Table 3: Consolidated FA Equipment Requirements, 2022

Item	Plant Required in 2022			Exist. Avail- able in 5 yrs	Able to be Shared	New Requ't
	Penama	Malampa	Tafea			
Excavator & screen	1	1	1	1	0	2
Loader	1	1	1	1	0	2
Tipper truck/Tractor-trailer	2	2	2	2	0	4
Grader/Mini-grader	2	1	2	1	1	5
Water truck	1	1	1	2	0	1
Roller	2	1	2	2	1	4
Dozer	0	0	0	3	0	0
	Total new items:					18

Tractor-Based Equipment

These estimates of FA equipment requirements do not take into account the possibility that tractor-based equipment (TBE) could complement FA resources and reduce the need for some new items. Unfortunately, the Concept Note found that the current trial (TBPET) is not a realistic test of typical tractor-based operations and costs, and conclusions about TBE's long-term role cannot yet be made. It considered that, if properly maintained, TBE could play a cost-effective role in keeping feeder roads open and maintaining the surface of lower-grade gravel roads, say of Class 3 and below, but for wider roads carrying more traffic, conventional plant would generally be preferred.

FA Staff Redeployment

FA staff are already concentrated on Penama, Malampa and Tafea. The estimated 19 in Shefa and 25 in Sanma should be redeployed with the equipment, with the precise numbers depending on annual workload and staff assignments at the time. Those unwilling to be deployed could be offered IBC-like contracts for a year or two to help them transition to IBCs.



Raising FA Productivity and Ensuring Sustainability

Labour Productivity

FA labour productivity tends to reflect the availability and productivity of equipment. When the right equipment is available, grading/re-sheeting operations can achieve rates of up to 6 kms per month, but average FA completion rates in 2017 are running at less than half of this, usually because of equipment failures and delays in repairs. Purchases of new equipment as proposed above, and the consolidation of full teams of equipment, operators and workshops in Penama, Malampa and Tafea, should help ensure that FA delays will be less frequent, at least for a while. Further improvements could be achieved by more effective training of operators (they currently receive little training, and there is no system of certifying operators' skills), introducing productivity incentives, paying crews based on output performance rather than person-days of input. If this cannot be done under public service regulations, then consideration could be given to offering FA teams IBC-like maintenance contracts instead.

Equipment Maintenance

New equipment and consolidation into full work-teams will help improve equipment availability and productivity in the short term, but it won't be long before repair delays build up again for lack of spares. Unfortunately, FA has little commercial incentive to optimise fleet maintenance to maintain high rates of productivity. Only a commercial fleet operator, or a maintenance contractor, is motivated to keep adequate spares and workshop capability, and to minimise non-operational time. Ultimately, road maintenance plant and equipment, including TBE, should be supplied at commercial rates through EHCs or directly by contractors, rather than PWD. Both EHCs and contractors are better able to make the commercial decisions about what plant models are optimal for any given task and how best to maximise utilisation to offer competitive hire rates, especially if PWD were to engage more directly and make information available to them on its planned works program.

A further alternative would be to procure new equipment under a "supply and maintain" agreement with suppliers over a 5- to 10-year period. This might work better than expecting EHCs to invest in expensive equipment and taking the risk of PWD using it or not. The supplier/s could even take over PWD maintenance facilities. This would need to be tendered internationally, with suppliers encouraged to spread payments over the maintenance period to limit impact on PWD expenditure in a single year.

Tasks and Timetable

Although the estimate of equipment needs was based on 2022, it is possible to achieve a degree of FA restructuring in time for full teams to be operating in 2019. The activities on the critical path for this are:

- Budgeting for equipment redeployment and purchases – this must be started in August 2017;
- Finalisation of 2018 work plans in Penama, Malampa and Tafea to accommodate the redeployment of FA teams, also to be started in August 2017;
- The redeployment of FA staff, which will require close consultations and negotiations;
- The disposal process for old equipment that is no longer operational;
- The transfer of operational equipment to Penama, Malampa and Tafea in accordance with Table 3 above, where they will be repaired and refurbished, and the procurement of the new items needed, together with spares, tools and workshop machinery;
- The training of workshop mechanics and operators for the new equipment; and



- The preparation of work plans for 2019, with full FA teams operating with updated productivity rates in Penama, Malampa and Tafea.

R4D is able to help support these tasks until mid-2018, to the extent that resources allow.

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4. Step 2: Introducing IBC and CBC Reforms in a Pilot Project

Background and Objectives

With PWD as network manager, contractors will be held more accountable for network outcomes. In shifting from managing hundreds of individual agreements to outsourcing management of parts of the network, PWD intends to trial and evaluate two new approaches before rolling them out country-wide:

- making contractors, rather than PWD Divisions, responsible for managing the involvement of community groups, retaining the benefits of community involvement in local road maintenance; and
- moving progressively from paying for inputs to paying for outcomes, with contracts covering longer sections of road over a longer period.

The first of these involves bundling formal community sub-agreements under outsourced maintenance contracts, with performance risk carried by the contractor. This will require amended contract documents mandating the use of such sub-agreements for labour-intensive tasks like vegetation and drainage clearing, but with the contractor still accountable for the quality of work done. Supervision of the community work will be done by the contractor, not by PWD's divisional staff or CPOs¹⁹. A further change would initiate a shift towards paying for outcomes – in terms of the availability and quality of the road – rather than inputs. These two changes – transferring management of community inputs to contractors and paying them for their performance in managing their sub-network – will be initiated in a trial contract with an IBC²⁰.

Community Agreements

In addition to its own performance against KPIs, the contractor will be required to report details of the agreements in force, the numbers of people employed by gender, the payments made to communities, and their compliance with social and environmental safeguards. Payment rates will cover the additional costs associated with this – a task for the annual rate review for 2018 contracts. PWD's CPOs will no longer verify work completed, but would focus instead on ensuring that the contractor's use of community labour is in accordance with its contract obligations (which will include formal CBC-like agreements) and that safeguards to protect community labourers are enforced.

Performance Indicators

Changes to the IBC and NC forms of contract will also be necessary to start the move from paying for inputs to paying on an output/performance basis. While some BoQ items will be needed for initial rehabilitation and later emergency works, new KPIs will be introduced with associated payments and penalties to incentivise the contractor's efforts to:

¹⁹ The 2014 *IBC Tracer Study* referred to in footnote 17 on page 10 also found a need for a more formal framework for community contracting. At that time, with close community connections, 42% of IBCs engaged all their labour through community agreements, but found the process burdensome. The study recommended more formal community contracts (CBCs) under PWD, but this has led to a mushrooming of such agreements, to the extent that PWD cannot cope effectively. Instead, the Concept Note (and this report) proposes that community agreements under IBCs should be more effectively formalised and monitored, with payment rates covering the additional administrative costs incurred by the IBCs.

²⁰ The intention is eventually to require NCs too to handle community involvement and move towards performance-based payments, but the PBMC reform – see Chapter 5 – is probably enough for NCs to be getting on with in the first instance.



- meet his obligations under community agreements,
- keep roads open under all weather conditions, especially by giving greater attention to maintaining effective drainage and flood protection, and
- maintain a consistent level of surface quality,

all of which will be verified as proposed below and in Chapter 6.

Contract Changes

Changes to IBC Contracts to Accommodate Community Agreements

Annex A contains a typical contract for IBC work (in this instance for a 70m x 3m wide concrete pavement on Tanna, but others have a similar format). The works are specified in a Schedule of Works and BoQ, with Specifications and Drawings part of the contract. The Engineer, as owner's representative, is appointed by PWD as Employer. A PWD-appointed Site Inspector (SI) assists with work measurement, but has no other delegated authority. Payments are based on measured work completed, agreed by the Contractor and certified by the Engineer. Specific provision is made (Clause 3.5) for unskilled labour to be hired from local communities and for work to be sub-contracted to local groups, with the Contractor encouraged to employ, and record the numbers of, women, but no specific form of community agreement is specified. Records of payments, including payments for community labour, are open to inspection by the Engineer, but are not part of formal reporting. Procedures for the resolution of disputes with local communities are agreed in advance between PWD, the Island Council of Chiefs (ICC) and the Province, in line with customary grievance resolution processes.

Amending this standard IBC contract to bring community involvement under more formal CBC-like protection is relatively simple:

- To the table of contents should be added "MODEL COMMUNITY AGREEMENT" as a new annex before "DECLARATION".
- To Clause 1 (Definitions) should be added the following new definitions:
"Community Agreement" means an agreement in the form set out in the annex MODEL COMMUNITY AGREEMENT between the Contractor and a Community Leader for the supply of labour and other inputs from the community.
"Community Leader" means a custom chief or representative of a local community empowered by the Island Council of Chiefs or the community to represent the community in agreeing to the terms of a Community Agreement.
- **Clause 3.3.2 Community Consultation** should be replaced in its entirety with:
"Before the work starts, the Contractor will consult with each Community Leader within the custom boundaries within which the work section falls and will brief them on the work to be carried out, the expectations of community labour and other inputs, the terms of any proposed Community Agreement, and arrangements for the documentation and resolution of disputes. Community Agreements must be signed before mobilisation is authorised. After work has commenced, the Contractor will meet monthly with the Community Leaders to verify the satisfaction of both parties with the Community Agreement and to document any concerns that require resolution. The discussions and agreements at all such meetings between the Contractor and the Community Leaders will be recorded, jointly signed, and submitted to the Employer."
- **Clause 3.5 Community Sub-Contracts and Unskilled Labour** should be replaced in its entirety with:



“Before the work starts, the Contractor and each Community Leader will jointly sign a Community Agreement in the form shown in the annex MODEL COMMUNITY AGREEMENT setting out any labour and other inputs to be provided by the community, the numbers of women to be employed, the schedule of works to be carried out by the community, the basis for measurement of the works completed, the payments to be made for the work completed, and procedures for the resolution of disputes.”

- **Clause 3.8 Employment Records** should be renamed “**3.8 Records of Employment and Community Agreements**” and replaced in its entirety with:
“The Contractor will keep full, complete and accurate daily records of the workers directly employed at the work site (Muster Rolls) and the workers employed separately under Community Agreements. These records shall include name, age, gender and home village. At monthly intervals, a summary of these records in a format approved by the Employer will be sent to the Employer.
The Contractor will also keep a record of all payments made under Community Agreements and will secure the Community Leader’s confirmation by countersignature that these payments have been received. Copies of these countersigned records will be sent promptly to the Employer.”
- **Clause 4.2.2 Progress Reports** should be amended to add the following after the existing text:
“The Monthly Progress Report will include a report on work progress and payments made under all Community Agreements.”
- **Clause 4.4 Wages of Staff, Day Workers and Sub-Contractors** is interpreted to include Community Agreements within the meaning of the term “Sub-Contractors”.
- **Clause 5.6 Settlement of Disputes** is interpreted to include, in reference to the term “Community (Group)”, all community members employed under Community Agreements.
- An Annex should be added entitled “MODEL COMMUNITY AGREEMENT” containing a standard community agreement modelled on the current CBC contract (see *Changes to CBC Agreements* below).

In reviewing IBC contract rates for 2018 and beyond, PWD will need to take into account the role of IBC contractor in administering Community Agreements. For the pilot, this will require revisions to the standard BoQ items for A Preliminary and General Items, most of which are currently paid on a lump-sum (LS) or provisional-sum (PS) basis. Items A1.1 (Consult Communities), A1.2 (Site Meetings with Local Communities on Health, Safety and AIDS/STD-Prevention) and A1.8 (Supervision of Works) should include the work done by the Contractor in establishing, supervising and administering Community Agreements. These revisions should be done at the same time as the annual review of rates for 2018.

[Changes to IBC Contracts to Accommodate Performance Standards](#)

IBC contracts currently use a standard BoQ and set of technical specifications (current under review by R4D). These are organised into nine groups: A - Preliminaries and General Items, B - Setting Out, C - Site Clearance, D - Drainage Works and Structures, E - Cement Concrete for Structures, F - Stone Masonry Work, G - Earthwork, H - Pavement Works, and I - Supply, Transport and Storage of Materials. All but ‘A’ are paid at rates for measured quantities; ‘A’ items are on a LS or PS basis.

Initially for the pilot, a move to performance-based payments would replace specific measured BoQ items with performance-based equivalents once the road is in a stable maintenance regime, i.e., after any initial rehabilitation of damaged sections. These will be in a separate category of works in the BoQ (“J - Performance-Based Maintenance”) and will specify the chosen KPIs and the monthly



payments to the contractor. A further change will set out in detail the penalties (in the form of payment deductions and accumulating penalty points) for failure to meet the KPIs. The specific changes will need special study (see *Tasks and Timetable* on page 24) to:

- translate high-level network objectives into agreed performance standards (KPIs) that can be objectively measured to provide the basis for performance-based payment;
- specify the BoQ items of work needed to bring damaged sections of the road to a condition that can be maintained against these performance standards;
- establish estimates of work and payment rates that are representative of the likely costs of meeting the KPIs subsequently on a continuing basis;
- establish procedures for measuring contractor performance against the KPIs;
- devising a system for dealing with unforeseen events or issues; and
- devising a penalty regime for persistent failure to meet the KPIs.

The following principles and proposals should guide this process for the initial IBC pilot:

- the pilot should be for the performance-based maintenance of an engineered gravel road of at least 10 kms in comparatively good condition, on an island (see *Selecting the Pilot* on page 22) where several IBC contractors operate who have close affinity with local communities;
- initial rehabilitation works should comprise the grading, reshaping, re-sheeting and drainage works on damaged sections of the road that make up the typical periodic maintenance activity normally carried out every three years, including, especially, repairs and reinstatement of drainage structures;
- the same contractor should carry out these initial rehabilitation works as is chosen to carry out the ongoing performance-based maintenance of the pilot road (to ensure he has “skin in the game”, encouraging him to do a good job on a road he will subsequently have to maintain);
- once these rehabilitation works have been completed and certified, the Performance Maintenance Period (PMP) will begin, running for a minimum of three years, but preferably five years, to cover the periodic maintenance cycle;
- for the duration of this PMP, the contractor will be paid a fixed monthly payment by PWD for maintaining the road, with the amount of the payment determined by PWD during preparation of the pilot and following the guidelines given in *Setting Performance-Based Payment Rates* on page 23;
- subject to a review of performance measurement and the incentive of penalties in the design of the pilot, the contractor will face penalties if, during the PMP, any one of the following three KPIs persistently fails to be met:
 - KPI-1: Satisfactory management and administration of Community Agreements, measured by the Contractor’s compliance with their terms and conditions, and the Community Leaders’ responses through monthly progress meetings;
 - KPI-2: Satisfactory accessibility for the communities served by the road, measured by the proportion of days per quarter when the road is considered trafficable; and
 - KPI-3: Satisfactory road condition, judged in terms of the proportion of the road’s length that is graded above a threshold condition, measured by independent rating, comfortable riding speed or surveyed roughness using hand-held survey devices and RoadRoid-like software²¹.

²¹ For details, see <http://www.roadroid.com/>.



These penalties will be designed to discourage persistent failure by the contractor, with the penalty rates escalating with multiple failures; for minor KPI infringements, an accumulating points system will allow persistent failure to escalate up to a financial penalty.

The contractor will also be required to hand back the road at the end of his maintenance period to a specified handback condition, and should be incentivised through the contract payment mechanism to do so.

None of this will have been experienced by PWD or any existing IBCs, so a comprehensive awareness- and capacity-building program must accompany the pilot's preparation and implementation. This is outlined in *Using the Pilot for Capacity-Building* on page 23.

Changes to CBC Agreements

Annex B contains an example of the standard CBC contract. The changes needed for the pilot, where the Community Agreement will be between the Contractor (not PWD) as Employer and the Community Leader (acting on behalf of the community), are as follows:

- On the title page, replace “Community Based Contract for Labour Services” with “Community Agreement for Road Maintenance Services”;
- On the title page, replace MIPU PWD as Employer with the name of the Contractor;
- On the signature page, replace “Public Works Department of the Ministry of Infrastructure and Public Utilities, representing the Government of Vanuatu (hereinafter referred to as PWD)” as Employer with the name of the Contractor, and add “(hereinafter referred to as the Contractor)”; replace all subsequent occurrences of “PWD”, “the Government of Vanuatu” and “the Employer” with “the Contractor”;
- On the signature page, in the reference to the Community, give the name of the community group and add “(hereinafter referred to as the Community)” in place of “(hereinafter referred to as the Contractor)”; replace all subsequent occurrences of “Contractor” and “Community Group” with “Community”;
- Delete all references to Provincial Community Partnership Officer (PCPO), Senior Community Partnership Officer (SCPO) and Community Partnership Officer (CPO), since their roles will be independent of the agreement between Contractor and Community, but will be part of PWD's separate supervision of the Contractor's performance against KPI-1.

Multi-Year Contracts and the CTB Contract Size Threshold

Two critical constraints on progress towards effective and cost-efficient outsourcing – indeed, two solid barriers to achieving PWD's ambitions to become a network manager – are the current restrictions set by the Ministry of Finance and Economic Management (MFEM) on multi-year budgets (hence contracts) for projects funded by the Government, and the low threshold of VUV 5 million on the value of contract above which Central Tenders Board (CTB) approval is required to initiate the procurement process and award a contract²².

The longer-term proposals of the Concept Note cannot be achieved if the CTB threshold remains as low as VUV 5 million and multi-year contracts cannot be executed. By maintaining these restrictions,

²² A review of contracts awarded in 2017 shows that many maintenance contracts, whether IBC or NC RFQ, are being awarded at a value just under the VUV 5 million threshold. Substantial CTB delays in approving RFT projects in the 2017 work plan has resulted in their being redesigned as smaller parcels to avoid the risk of under-spending the budget by year's end. The threshold, presumably designed to scrutinise value for money (VfM), is resulting in larger, more cost-effective projects being chopped up into smaller, much less efficient and more costly parcels – the opposite of what is intended by the regulation.

the Government is making the costs of road maintenance much higher than they should be, even with existing delivery arrangements, and certainly a lot higher (probably by 30-40%) than they would be if the Concept Note's proposals were adopted. How, then, can these restrictions be overcome? In two ways:

- as an interim measure, by funding the pilot projects proposed in this report directly from donor grants (i.e., not from the Government budget), and seeking exemptions from CTB procurement approval and multi-year contract restrictions, as has been done for multi-lateral grant and loan programs; this will at least allow the pilots to proceed, and to build evidence of the efficiencies of delivering road maintenance through larger, multi-year contracts; and
- by submitting for the approval of the Council of Ministers (COM) two policy proposals: one, proposing a significant increase in the CTB threshold, at least for infrastructure maintenance projects, to allow larger, multi-year projects that can demonstrate economies over existing methods of procurement; the other, to remove restrictions on multi-year budgeting in cases where cost savings can be clearly demonstrated. In both cases, the justification for removing the restriction would be that it would result in significant savings to the Government and improved network quality for road users. Drafting the COM papers should be done carefully, and probably only when the proposed PBM pilots are underway: it would need to show clear evidence of such cost savings and quality improvements.

Selecting the Pilot Network and Contractor

Selecting the Pilot Network

Selection of the sub-network for the pilot has several considerations: the selected road/s should be capable of ongoing maintenance after initial rehabilitation, and this rehabilitation should not dominate life-cycle spending (rated as R1 in Table 4); it should be reasonably representative of conditions throughout the country (R2); the sub-network should be of sufficient size to warrant the commitment of resources by the contractor (R3); and it should be capable of achieving a workable relationship between the island-based contractor and local communities (R4). Table 4 rates eligible sub-networks (islands) according to these four criteria. It suggests that the most likely candidates are Malekula, Ambrym and Ambae, with Pentecost, Maewo, Epi and Erromango close behind. This conclusion should be reviewed by PWD and the Divisions before a final selection is made.

Table 4: Considerations in Selecting the Pilot Province

Province	Islands	Ratings				Comments
		R1	R2	R3	R4	
Torba	Vanua Lava	●	●	●	●	Probably too small and unrepresentative
Malampa	Malekula	●	●	●	●	Good candidate
	Ambrym	●	●	●	●	Good candidate
Sanma	Santo	●	●	●	●	Unrepresentative; high NC market share
Penama	Ambae	●	●	●	●	Good candidate
	Pentecost	●	●	●	●	Good candidate?
	Maewo	●	●	●	●	Good candidate?
Shefa	Epi	●	●	●	●	Possible candidate
	Efate	●	●	●	●	Unrepresentative; high NC market share
Tafea	Tanna	●	●	●	●	Unrepresentative
	Eromango	●	●	●	●	Possible candidate

Notes: ● Meets criterion; ● Less satisfactory



Selecting the Contractor

While in the long term competitive bidding will likely result in better network management at least cost, there are strong reasons for restricting competition for the pilot project to IBCs who already work effectively on the chosen island and are willing to carry out the pilot with close scrutiny and technical assistance. The approach taken for the initial pilot, therefore, following selection of the island sub-network, would be to:

- hold briefing meetings and workshops with the IBC contractors working on the island (as well as briefing the local communities) to explain the proposed approach and the obligations of the contractor, including likely risks and the adjusted terms, payments and penalties for (i) management of the Community Agreements (KPI-1) and (ii) maintaining the road against KPI-2 and KPI-3 during the PMP, both of which will have been set during the pilot's design;
- invite written expressions of interest (EOIs) in carrying out the pilot under the terms proposed, but also allowing interested contractors to propose changes to the proposed terms and rates; and
- negotiate a contract with the contractor which shows the best understanding of its responsibilities and obligations under the pilot, and comes closest to accepting the proposed payment rates.

Setting Performance-Based Payment Rates and Penalties

During the pilot design phase, PWD will develop a realistic estimate of the total costs of maintaining the pilot roads over the PMP, following initial rehabilitation. These will be converted to monthly averages and, unless adjusted following negotiations with the preferred contractor for the pilot, will be the fixed monthly performance payments to the contractor while he continues to meet the KPIs²³.

The penalty regime will also be devised in the pilot design phase. This will distinguish between critical and less-critical shortcomings in relation to the chosen KPIs. Persistent failure to meet less-critical shortcomings will result in an accumulating point score which, once it reaches a specified threshold, will trigger payment deductions. Critical shortcomings will result in deductions from the next payment. Deductions will continue until the identified shortcoming has been addressed.

Using the Pilot for Capacity-Building

Clearly these are all alien concepts for the current crop of IBCs. The design of the pilot will need to recognise this. It will necessarily involve a degree of hand-holding and technical assistance: after all, the main aim of the pilot will be more to develop the capacity of IBCs to handle such performance-based maintenance tasks than to maintain the road. The pilot will be an opportunity to explain and illustrate the new skills involved on the part of the contractor and PWD. These include an understanding by both parties of:

- the maintenance life-cycle, and the impacts of quality (of work and materials) on future maintenance costs;
- the causes of road deterioration, and of the cost savings achievable with preventive maintenance (particularly of drainage) when compared with reactive repairs;
- the advantages of productivity and cost control in reducing the costs (hence increasing profit margins) of meeting specified KPIs;

²³ Future PBMCs would move to tender-based pricing, i.e. with the successful bidder being the one who commits to meeting the KPIs over the PMP for the least fixed monthly payment.



- the importance of road serviceability as the primary purpose of the network and its maintenance, not just the delivery of specified inputs;
- the importance of community involvement and social safeguards to the supply of labour and maximizing community support; and
- the changed nature of supervision, from a technical one that certifies inputs to a broader, and less technical, one of ensuring the availability and quality of the network.

A critical part of the pilot's design, therefore, will be the briefings, workshops, training and technical assistance needed to build this understanding and capability. These are included in the timetable below.

Tasks and Timetable

Figure 12 shows a suggested schedule for the IBC/CBC pilot. It envisages contractor mobilisation and rehabilitation works on the selected sub-network starting in January 2019, and the PMP (the period during which the contractor maintains the road under the KPI/performance regime) running from about July 2019 to the end of 2021. R4D assistance is assumed in the design and preparation of the pilot, including all briefings, workshops and training; depending on DFAT's design of R4D's replacement facility, the new facility might continue supporting the implementation, monitoring and evaluation stages. However, the R4D team would need strengthening and possible increased budget to allow this proposed timetable to be met.

The most critical constraints on timing come from:

- the availability of technical support for the design, preparation and implementation of the pilot (the schedule assumes that this will come from R4D in 2017/2018 and its replacement facility thereafter, but the latter depends on the upcoming design process);
- the process of securing exemption from CTB procurement approval and budget restrictions on multi-year contracts (the schedule assumes that this will be possible if DFAT or other donor/s agree to fund the performance-based payments directly from mid-2019 to end-2021);
- the process within MIPU and PWD of securing approval to proceed with the pilot, and of confirming the choice of sub-network/island; and
- the TA inputs likely to be needed to bring candidate IBCs and PWD to an understanding of performance-based maintenance, and its differences from conventional maintenance procurement.

Managing Risks

Table 5 sets out the main risks to the proposed strategy and the measures taken to minimise them and their potential impact. This register of risks will be maintained and updated through the design, preparation and implementation of the pilot.



Table 5: Risk Management Strategy

Risk	Potential Impact	Mitigation Strategy
<ul style="list-style-type: none"> PWD cautious about making proposed changes 	<ul style="list-style-type: none"> Pilot does not proceed, or is delayed 	<ul style="list-style-type: none"> Brief senior MIPU and MFEM leaders on the justification for the concepts; provide evidence of expected cost savings and quality improvements Brief PWD Directors, Divisions and staff on the benefits of transferring delivery risk to contractors and the difficulties of supervising CBCs by PWD
<ul style="list-style-type: none"> DFAT unwilling to support assistance to preparation of the pilot 	<ul style="list-style-type: none"> Pilot does not proceed, or is delayed 	<ul style="list-style-type: none"> Provide DFAT with information on the proposed reforms and their justification Assist DFAT in compiling inputs to the coming design of the new infrastructure facility
<ul style="list-style-type: none"> DFAT or other donors unwilling to support direct performance-based payments 	<ul style="list-style-type: none"> Payments would then have to be made from the GoV budget Limited donor influence by introducing best practice 	<ul style="list-style-type: none"> Develop a business case showing the cost savings expected from performance-based delivery Strengthen the case for direct donor funding by illustrating the implications of CTB and contracting constraints on GoV-funded delivery
<ul style="list-style-type: none"> GoV unwilling to approve CTB procurement exemption or multi-year contract commitment 	<ul style="list-style-type: none"> Procurement would have to follow existing channels; loss of significant potential costs savings 	<ul style="list-style-type: none"> Strengthen the case for revisions or exemptions from existing regulations by providing evidence of expected savings and improved delivery quality
<ul style="list-style-type: none"> Procurement path for pilot does not comply with RFT regulations/procedures 	<ul style="list-style-type: none"> CTB requires full tender for pilot 	<ul style="list-style-type: none"> Strengthen the case for choosing the contractor from existing IBC in the chosen island who have strong connections with local communities there
<ul style="list-style-type: none"> KPIs prove difficult to measure objectively 	<ul style="list-style-type: none"> Contractor is not held accountable for performance; network quality not assured 	<ul style="list-style-type: none"> Establish KPIs that are simple, achievable and objectively measured Workshop the proposed KPIs with candidate contractors; adjust KPIs if necessary on contractor feedback
<ul style="list-style-type: none"> PWD fails to price KPI compliance realistically 	<ul style="list-style-type: none"> Contractor refuses to accept PBM payment rates; pilot cannot proceed 	<ul style="list-style-type: none"> Update prices transparently as part of the annual price review process Explain proposed rates to contractors; amend if necessary on evidence of additional costs
<ul style="list-style-type: none"> IBCs object to methods used to verify performance against KPIs 	<ul style="list-style-type: none"> Contractor refuses to accept verification process; pilot cannot proceed 	<ul style="list-style-type: none"> Ensure that verification is objective and carried out independently Explain proposed procedures to contractors; amend if necessary on feedback
<ul style="list-style-type: none"> IBCs fail to understand PBM concepts or unwilling to take on performance-based risk 	<ul style="list-style-type: none"> Contractor consistently fails to maintain road to KPIs 	<ul style="list-style-type: none"> Provide TA and hold regular field workshops to assist the contractor in meeting his obligations; include other IBCs in these workshops (for future PBM projects)
<ul style="list-style-type: none"> CPOs have difficulties adjusting to their role under the pilot 	<ul style="list-style-type: none"> Communities lose faith in the process; Community Agreements fail; communities 	<ul style="list-style-type: none"> Relieve CPOs of any technical supervision role



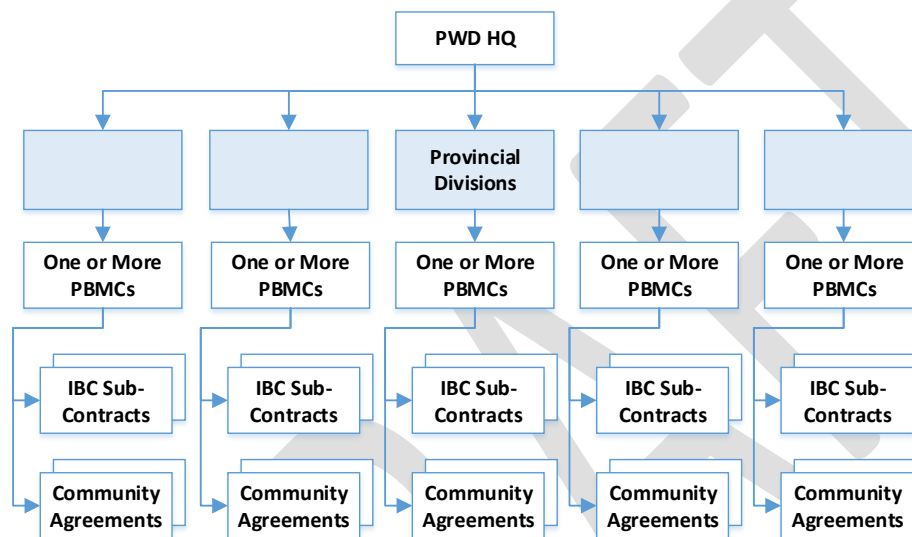
Risk	Potential Impact	Mitigation Strategy
	create difficulties for further work	<ul style="list-style-type: none"> • Brief and train CPOs in their role of monitoring compliance with Community Agreements and social safeguards; CPOs to assist in mediation if necessary, prior to escalation of disputes • Brief communities in their role, obligations and dispute resolution procedures
<ul style="list-style-type: none"> • PWD Divisions have difficulty adjusting to their role under the pilot 	<ul style="list-style-type: none"> • PWDs treat PBM contracts as if conventional maintenance contracts, with micro-management 	<ul style="list-style-type: none"> • Brief and train PWD staff in their more hands-off role in supervising the PBM pilot; focus on performance against KPIs • PWD HQ to monitor records of monthly meetings to ensure that Divisional staff do not take on performance risk or dilute contractor accountability by issuing unnecessary instructions
<ul style="list-style-type: none"> • IBCs resist contract changes regarding formal Community Agreements 	<ul style="list-style-type: none"> • IBC cannot work with communities under proposed arrangements for the pilot 	<ul style="list-style-type: none"> • After briefing candidate IBCs on the expected formal arrangements involving Community Agreements, rule out those contractors who, at EOI stage, propose a dilution of those arrangements
<ul style="list-style-type: none"> • Conflict between IBCs and local communities; local communities resist sub-agreements with IBCs 	<ul style="list-style-type: none"> • Work stops as a result of dispute 	<ul style="list-style-type: none"> • Ensure that all parties understand their obligations prior to start of contract • CPOs to monitor progress of Community Agreements and help mediate where possible • Dispute taken to formal resolution in accordance with contract
<ul style="list-style-type: none"> • IBCs fail to pay for inputs in accordance with Community Agreements 	<ul style="list-style-type: none"> • Community groups no paid for work; work stops 	<ul style="list-style-type: none"> • Ensure that all parties understand their obligations prior to start of contract • Invoke penalties for under-performance in relation to KPI-1; maintain (and escalate) these penalties until payments are made
<ul style="list-style-type: none"> • IBCs lack equipment to deliver their obligations under the pilot contract 	<ul style="list-style-type: none"> • Work fails to meet performance KPIs 	<ul style="list-style-type: none"> • Ensure EOIs and contracts make clear that the necessary equipment is available • Invoke penalties for under-performance in relation to KPI-2 and KPI3, maintain (and escalate) these penalties until payments are made

5. Step 3: Piloting Long-Term PBMCs in a Demonstration Project

Background and Objectives

The Concept Note envisaged PWD eventually managing its network through several long-term performance-based maintenance contracts (PBMCs), as illustrated in Figure 13. Each would be accountable for managing its part of the network (usually an island or two) in accordance with network-level KPIs, and would suffer penalties if it failed to do so, like the more limited IBC trial proposed in the previous chapter. In the case of long-term PBMCs, and depending on the size of the network to be managed, the contractor is more likely to be a NC, possibly with some additional foreign technical expertise, but would (like the IBC pilot) be required to have formal arrangements for sub-contracting to IBCs and local communities for tasks requiring close community involvement.

Figure 13: Eventual Maintenance Delivery Structure



As noted earlier, PBMC models, including hybrid models involving initial rehabilitation, are common around the world. Guidelines are available on best practice²⁴, and lessons can be learned from the experience of others. Key success factors include:

- a network manager that understands the PBMC concept and process, recognises the benefits of appropriate risk allocation, adopts clear documentation, and gives potential contractors the confidence that agreements will be honoured;
- a network managed under each PBMC that is sufficiently large (100 kms or more) and a contract term sufficiently long (4-5 years or more) to justify the contractor's investing in capacity (equipment, staffing, skills) to be sure of meeting KPI requirements;
- pre-bid briefings and workshops to explain the differences between PBMCs and conventional BoQ contracts, and to help ensure that bidders have the necessary skills (some of which might have to come through foreign partnerships) to assess, price and manage risks over the contract period;

²⁴ Examples: <http://www.nigp.org/docs/default-source/New-Site/global-best-practices/performancebased.pdf?sfvrsn=2>; https://obamawhitehouse.archives.gov/omb/procurement_guide_pbmc; <http://www.performance-based-road-contracts.com/documents.htm>; http://www-esd.worldbank.org/pbc_resource_guide/Update/IntExperience-PBMaintenanceContracts.pdf; http://www-esd.worldbank.org/pbc_resource_guide/Case-Australia.htm.



- a contract that doesn't overly specify the works to be carried out and the materials to be used, but leaves it to the contractor to optimise his use of resources to meet the KPIs consistently over the contract period²⁵;
- a competitive tender process, with sufficient time given to bidders to carry out due diligence and assess the performance risks they face, and with selection from pre-qualified contractors based on a single bid variable: the fixed payments needed to cover expected risk-adjusted costs and profit;
- limited opportunities to introduce contract variations; and
- KPIs that are simple and easily verified as the basis for payment or the imposition of penalties.

Piloting a Long-Term PBMC in Vanuatu

The IBC pilot (Chapter 4) is a trial of PBM on a small scale – around 10 kms. The long-term PBMC would be ten times larger (around 100 kms), probably of longer duration, and would include both core roads and feeder roads. Network selection is subject to similar criteria, but would also require the presence of sufficient numbers of competent and competitive NCs²⁶. The project would embody several of the same concepts – appropriate risk allocation, contractor autonomy, and performance-based payments, with deductions, against verified KPIs – and would therefore learn from the lessons of the IBC pilot experience. But as the ultimate delivery model under a network manager, it should be designed less as a trial/pilot and more as a demonstration of best practice. More care should be taken in the selection of the pilot network, and in scoping the initial rehabilitation works needed to bring it to a maintainable state. More complete information on construction and performance history, materials, road conditions and traffic should be given to bidders to enable them to price realistically. PWD must develop a better understanding of delivery risk and the life-cycle costs of maintenance²⁷, so that it can evaluate bid prices competently and secure best VfM. It must also meet all the requirements for transparent, competitive tender, and compliance with all GoV procurement regulations; without probity and transparency in design and procurement, bidders will put a higher price on risks than they might otherwise. The pilot cannot be done in a hurry.

Figure 14 shows a likely schedule of tasks. With a properly-designed demonstration project, it is unlikely that mobilisation of the PBMC contractor could be achieved before January 2021, with the contract running for at least five years (to be confirmed in the design). The reasons for this are:

- the necessity to build the confidence of potential bidders (who are effectively investors in the road) in the procurement process and the capacity of PWD to manage it;
- the need to raise awareness and understanding of PBM concepts among GoV decision-makers, contractors, PWD staff and the general public – the justification, the way they are procured and managed, the cost-saving and quality opportunities they present, and the risks involved; in addition to workshops and training, this will involve a visit to review overseas practice and experience by MFEM, MIPU and PWD staff;

²⁵ From experience elsewhere, he will usually do this by completing early works (e.g. initial rehabilitation and drainage works) to a higher standard than usual to minimise later maintenance costs and the risk of failing to meet his KPIs. This is another of the advantages of long-term PBMCs.

²⁶ The network should be selected in the design process. But the requirement for NC expertise suggests that networks on Santo or Efate would be most suitable for this first long-term PBMC.

²⁷ Tools like HDM4 are available to simulate road performance under alternative life-cycle maintenance strategies, allowing the optimum schedule of treatments to be determined. The associated annual costs provide a yardstick by which to judge bids.



- the need to build the support of donors who, it is hoped, will assist with project preparation, procurement, monitoring and evaluation, and fund performance-based payments from grant or loan resources until GoV can do so (see *Donor Support* below).

Performance Indicators and Verification

The IBC pilot will enable PWD to judge the merits of the KPIs adopted for the performance-based component: KPI-1 (community compliance), KPI-2 (accessibility) and KPI-3 (condition), unless modified in the pilot's design. For consistency's sake, PWD should try to use the same KPIs for the long-term PBMC: contractors will have become familiar with them, and procedures will have been established for verifying performance against them. But there will be a need to vary the indicator measures and associated rates and penalties where, as is suggested, the demonstration project involves a mix of core and feeder or basic access roads.

Contract and Sub-Agreements

The design of the long-term PBMC should include a review and revision of existing standard contract documentation to capture the roles of Employer and Contractor under its new arrangements for performance risk allocation. This should include a review of international models of hybrid rehabilitation/PBM contracts, of which there are many.

Not all international models will be appropriate to Vanuatu, however. There is a strong case for securing formal community support and involvement in PBMCs through sub-agreements with IBC and communities, as has been proposed in Chapter 4 for the IBC pilot using Community Agreements. The contract documentation should make formal provision for IBC and community sub-agreements while retaining head-contractor accountability for performance. As for the IBC pilot, this should include a community-compliance KPI, like KPI-1, as one of the main performance criteria and bases for payment.

Donor Support

Preparation, procurement, monitoring and evaluation of the Long-Term PBMC demonstration project will require external expertise, training and (if this reports' proposals to overcome CTB and long-term contract constraints are accepted) funding of the PBM payments, at least for 2-3 years until the model is proven.

There are two possibilities for this:

- adoption by DFAT of this report's proposals within the design of its post-R4D infrastructure facility, which will start in 2018; or
- adoption of the PBM demonstration project as one that complies with the climate-resilience goals of the Vanuatu Infrastructure Reconstruction and Improvement Project (VIRIP)²⁸.

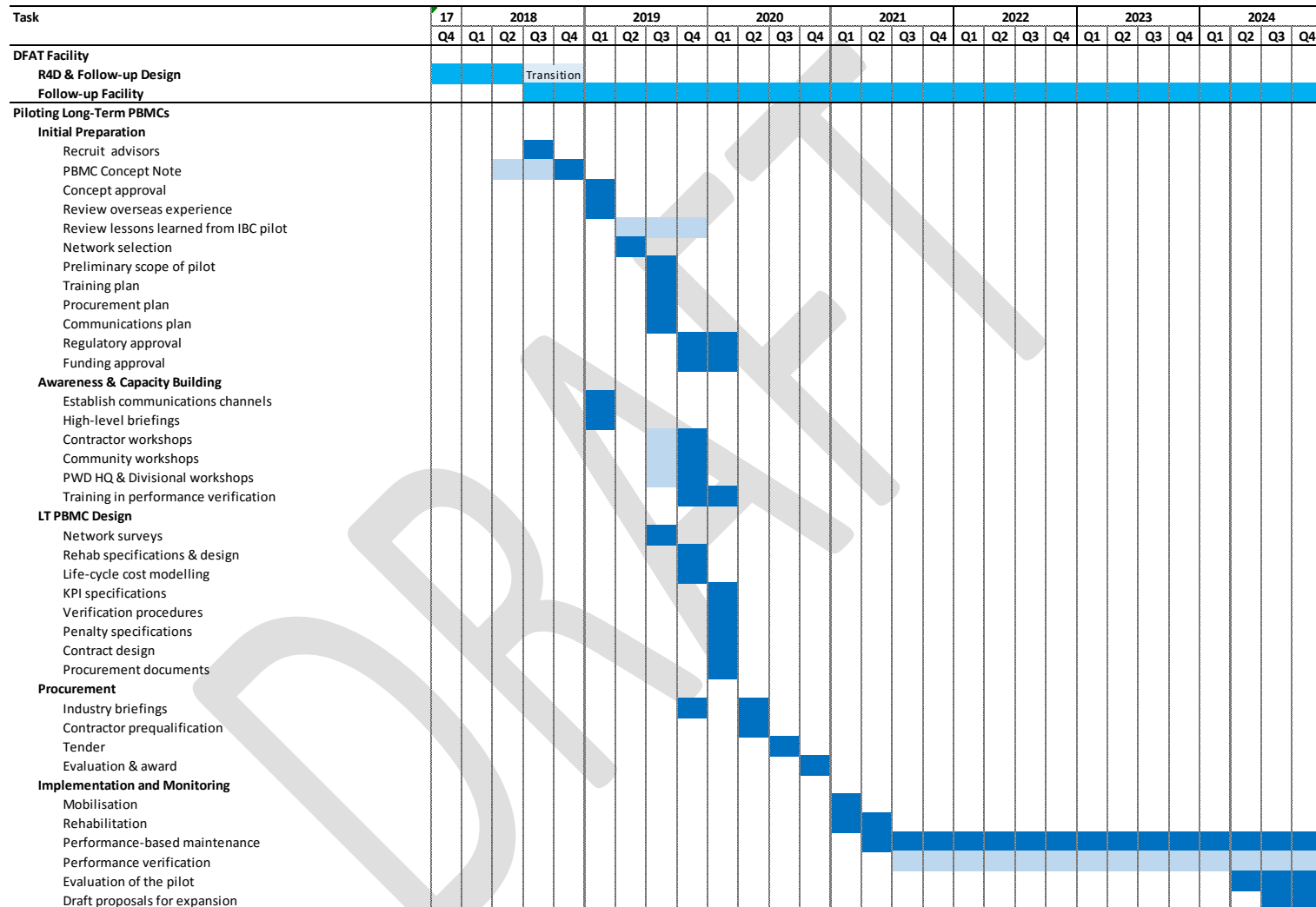
A combination of the two would be best, with the DFAT facility funding project design, preparation, procurement and evaluation, and VIRIP funding implementation. This would be consistent with emerging DFAT policy favouring closer ties with multi-lateral development agencies.

PWD will need to discuss these options with DFAT and the World Bank.

²⁸ VIRIP is intended to fund reconstruction and improvement (i.e., capital) projects of roads and other infrastructure following damage done by Cyclone Pam in 2015, but it also has the objective of strengthening infrastructure resilience to similar disasters. Arguably, performance-based management of portions of the network – and the associated strengthening of contractor capabilities – could be considered consistent with this. USD 26 million is available under VIRIP for road infrastructure.



Figure 14: Implementation Schedule for Long-Term PBMC Pilot





6. Step 4: Network Asset Management

Background

A road asset management system (RAMS) is a pre-requisite for PWD's role as network manager. A RAMS will enable it to optimise spending to achieve defined network objectives. With a RAMS, PWD will always know the condition of its network and how effective its maintenance strategies are in meeting those objectives.

Two RAMS components have been introduced by R4D: the inventory system (RIMS) and the budget allocation system (BAS). A prioritisation tool has also been developed for allocating PWD's rural roads budgets between links and projects on a rational basis; it will shortly be used in preparing the 2018 budget. A program of traffic-count surveys is underway, and preparations are being made for routinely assessing road conditions using vehicle speed and observations of road damage as the basis for condition rating. The intention is to develop these further into a RAMS that provides a more rigorous basis for allocating budgets based on road conditions, traffic, and optimum maintenance treatments.

PWD is on the right path to having a RAMS for its planning, budgeting, performance monitoring and reporting. But there is a risk that these efforts might not be sustainable. Similar systems in other countries have fallen into disuse because of a failure to continue budget support for surveys and the system's maintenance, trained staff moving elsewhere, the complexities of such systems, or a lack of continuity in donor support. A successful system needs technical and budget support over a long period.

Sustaining a RAMS Capability

Whether PWD's RAMS is sustainable will depend on decisions made in the design of DFAT's follow-up infrastructure facility. Before the end of R4D in 2018, the basic building-blocks will likely be in place for PWD, albeit based on linked Excel spreadsheets:

- in the RIMS database, an inventory of road conditions (which hopefully will be routinely updated over time), a condition rating system, and the results of traffic surveys, all of which provide the basic inputs to –
- the prioritisation tool which, as the term implies, prioritises links according to road function, condition and traffic, leading to –
- the BAS which, once the rural roads budget envelope has been notified by MFEM, determines the maintenance projects to be carried out on priority links in the coming year, chooses the method of delivery, and estimates their costs, based on updated estimates of unit costs for standard BoQ work units, and then allows contracts to be defined for the works once the final budget has been approved; and
- a standard set of reporting formats which list the planned works, by contract, and show the physical and financial progress against each.

The system does not yet incorporate PBMCs, but forward expenditures under the pilot IBC and PBMC (Chapters 4 and 5) can be programmed as committed expenditures prior to using the BAS to allocate the remaining budget. Nor does the system yet have the facility to model road deterioration and the impacts of completed projects, which would strengthen forward planning and life-cycle optimisation. And improving interrogation is another step that would make it possible for anyone to know exactly what is the condition of any link, what's being planned or is underway, what's the



progress, and how, over the long run, what's been the impact of these works on the overall condition of the network, measured against target KPIs.

Despite R4D's capacity-building efforts, however, it is unlikely that this progress can be sustained, and the functionality of RAMS maintained, over the long term without continuing technical assistance. And there is no obvious source of this TA other than R4D before mid-2018 and DFAT's follow-up facility after that. DFAT should recognise this in designing the follow-up facility in the coming weeks.

Moreover, the risks to PWD's program of a loss of RAMS functionality are profound. Its needs assessment, planning, budgeting, contracts management, completion certification and reporting depend critically on it. Without it, PWD would revert to how matters were at least 4-5 years ago.

Certain RAMS functions are central to its functionality. PWD should seek assurances of continuing funding and technical support for, at the very least, (i) the data collection tasks without which the system would be useless and (ii) the further development and operation of the system in support of PWD decision-making. In the design of the new facility, these two tasks should be placed squarely under the responsibilities of the managing contractor and funded by DFAT, with a funding commitment made for the remainder of R4D and the first 2-3 years of its successor.

Under this arrangement, the managing contractor would be accountable for:

- the quality and reliability of specified data, and for generating reports to PWD's specifications; surveys of road conditions would make use of low-cost hand-held devices and software like RoadRoid²⁹, in preference to any subjective rating of road conditions; and the resulting data would be available on-line for monitoring, reporting and analysis;
- running tests of alternative network, treatment and funding scenarios, and recommending works schedules and investment strategies, providing RAMS outputs to support PWD decision-making;
- carrying out independent technical and completion audits in support of both conventional and PBM contracts; and
- developing and trialling new procedures for enlisting community leaders in signalling possible shortfalls in IBC/NC/PBMC contractor performance, including the use of mobile and smart phones³⁰.

Training would also be provided to PWD staff to enable them to understand and make effective use of the data and decision tools. The facility's managing contractor would be incentivized to train its own local staff so that a pool of the necessary skills is maintained within the country to ensure it complies with its own performance-based contract conditions.

Given the Minister's commitment to maintaining all-weather access under RRAP, RAMS and its survey procedures should pay specific attention to monitoring the condition of drainage and water crossings³¹. R4D and its successor should help devise a survey program and maintenance strategy that better addresses this problem in the context of policies to strengthen resilience to climate

²⁹ For details, see <http://www.roadroid.com/>.

³⁰ A similar approach was recently developed under the DFAT-supported Indonesia Infrastructure Initiative (IndII) for use in monitoring small-scale roadworks by local communities in Lombok.

³¹ Road asset management systems usually model pavement deterioration over time and under the impact of traffic, but the most significant cause of road failure is often from water after heavy rains, a problem likely to get worse through the effects of climate change.



change, allowing PWD and its contractors to increase their focus on drainage and protecting bridges and culverts through river training works and other treatments.

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7. Step 5: Institutional Capacity-Building and Reorganisation

Skills Required for a Network Manager

Figure 2 on page 3 illustrates the differences between a conventional public works department and a network manager. Moving PWD from one to the other will not happen overnight. The pace of change will be governed by the IBC pilot and PBMC demonstration projects: a large part of their justification is to illustrate and help establish the skills needed for more arm's-length management of parts of the network according to performance targets. While conventional delivery under NC, IBC and CBC contracts will continue in parallel, the pilot and demonstration projects will introduce new contract management and reporting skills that will be established progressively within the organisation. Training and capacity-building under the IBC pilot and PBMC demo will be extended to other performance-based contracts over time and as experience is gained. Ultimately, there will be a change of institutional culture and structure. The technical tasks associated with procuring and managing over 340 individual contracts each year will become less important, and network monitoring and reporting will become more so.

Plans for a Ministry of Transport

Consideration is being given to establishing a Ministry of Transport (MOT) to coordinate all transport sub-sectors – roads, maritime and civil aviation – more effectively within a consistent policy, planning and delivery framework. This is expected to strengthen intermodal transport services, unify regulations governing market entry, competition, safety and environmental protection, apply consistent principles of pricing and cost recovery, allow the respective modes to develop their optimum role in the transport system, and guarantee transport users a standard of infrastructure that meets their needs optimally within government budget constraints. An upcoming ADB-funded program is expected to assist in planning for this change.

PWD's move towards a network manager is fully consistent with this strategy. The steps outlined in this report will equip the roads-sector manager with the skills and processes to report on its own performance against KPIs that relate to the overall functioning of its network, as part of an integrated transport system. The arm's-length relationship with network service-providers mirrors those that already exist in other modes between MIPU's high-level policy and planning function and its transport and infrastructure service providers.

Business Process Mapping

The most useful approach to defining and progressing the institutional changes needed for PWD's new role is to base decisions on a detailed business process map. Business Process Mapping (BPM) defines an organisation's workflow and decision-making steps, creating a map of how it works (Box 2). Figure 15 shows an example of a BPM.

A BPM of PWD's functions as a network manager would elaborate on the detailed tasks, workflows and decisions down the right-hand column of Figure 2 (page 3). A BPM of its current approach to delivering projects would be a more detailed version of the left-hand column. A very simplified illustration of the two approaches is given in Figure 16 below³². In the transition, new functions from the lower (network manager) business process would be established through the RAMS, IBC pilot

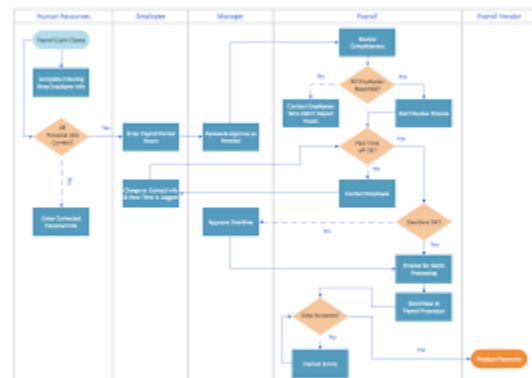
³² The diagram is for simple illustration. A full BPM would capture all the actions of key managers and work units, their outputs and lines of reporting, the inputs to their actions, and the decisions they take. Once an agreed BPM has been adopted, it is very useful in defining roles and responsibilities, task descriptions, staffing and skill levels, report formats and content, data inputs, data retention, analysis tasks, documentation management, and approval sign-off.

and PBMC demonstration projects, in steps moving progressively away from the upper (conventional public works) business process in Figure 16.

Box 2: Business Process Mapping

BPM defines what an organisation does, who is responsible, how internal processes should be completed, and how effectiveness is determined. It shows the tasks and workflow needed to achieve the organisation's objectives, and is useful in defining – and optimising – tasks, workloads, job descriptions, skills, decision-making and reporting.

Figure 15: Illustration of a BPM



The new functions and capabilities that will be developed through the TA and training supporting the RAMS process and IBC pilot and PBMC demonstration are:

- setting network performance standards that can be translated into the KPIs – like KPI-2 and KPI-3 discussed in Chapter 4 – that PBMCs are expected to meet;
- monitoring the condition of the network on a routine basis, using simple, inexpensive tools like RoadRoid, to provide a reliable basis for forecasting maintenance needs and to track overall network performance;
- estimating the life-cycle costs of maintaining each link optimally (i.e., to maximise VfM), both for long-term budgeting and to verify contractors’ bid prices;
- preparing, procuring and managing PBMCs, including verifying performance against KPIs and applying penalties where performance falls short; and
- reporting on network performance, not only in justifying budgeted expenditures, but also in keeping Government, stakeholders and the public fully informed about PWD’s own plans, activities and performance, with access open to all.

Migration of staff and work units to these new functions will be managed by the progressive implementation of RAMS and the performance-based delivery models: as additional examples or activities are planned and implemented, staff will be assigned and trained to add to the resources committed to the pilots.

Functions and Decentralisation

Preparation of a BPM for PWD as network manager will also help decisions about who does what, and where, like the decentralisation of functions and work units. HQ units, for example, could be assigned the functions of RAMS management, budget allocation, prioritisation of long-term PBM contracts, information systems, and overall network performance reporting; the Divisions could manage road condition and traffic surveys, contractor procurement, PBMC performance monitoring and verification, and reporting to HQ.

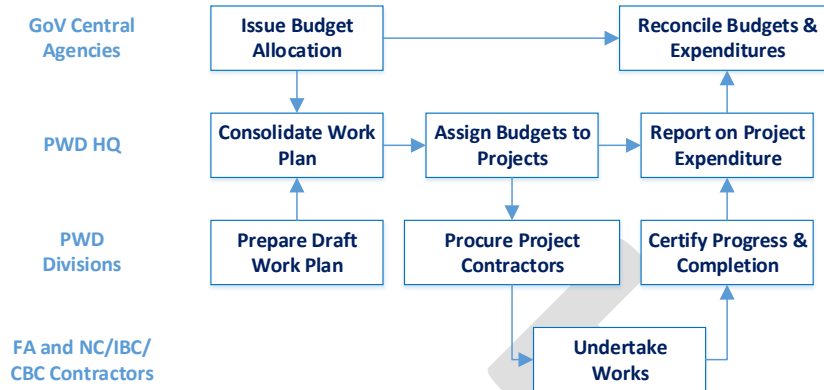
Impacts and Risks

The BPM will also help identify those most likely to be impacted by the change in PWD’s functions and structure. It is too early to attempt this now, but the likelihood is that the phased transition through several pilot/demonstration projects will allow a parallel transition of skills, as TA and

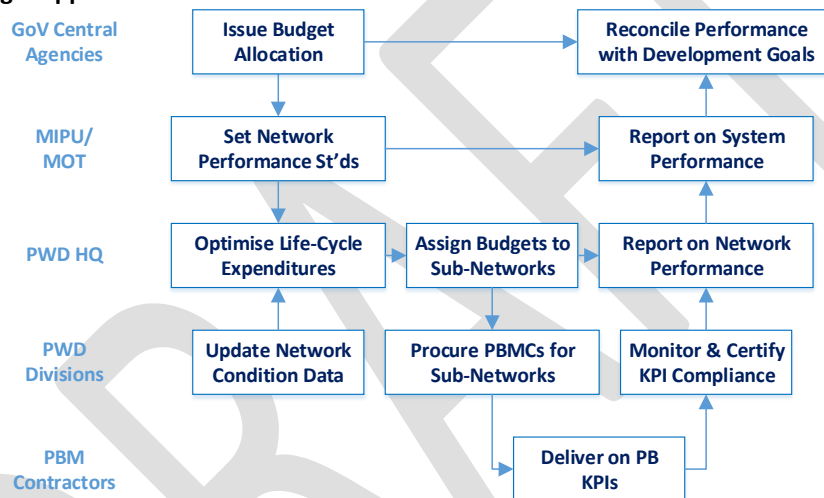
training help build up the institutional capacity to manage the new surveys, forms of contract and approaches to performance verification.

Figure 16: PWD Business Process Maps

Conventional PWD approach:



Network Manager approach:



Financing and Budgeting for Infrastructure

A key question for the network manager is the sustainability of funding for maintenance. This has led to thoughts about establishing a Transport Infrastructure Maintenance Fund (TIMF) as a reliable source, paid for either from earmarked tax revenues or from a new charge on users. Both those options are difficult to establish and justify, as many other countries have found. What finance ministry is willing to earmark funds for one sector when others have equally urgent needs? What politician is eager to impose an additional charge on users when the existing costs of transport are already perceived to be high? Who could resist the temptation to raid the balance of a dedicated maintenance fund when other needs seem to be more pressing?

Long-term PBMCs offer a part-solution. The more long-term PBMCs there are, the greater the Government's commitment – through contract – to funding the annual stream of expenditures involved. And this commitment is worth making whenever the costs of the PBMC can be shown to be lower (and quality higher) than the alternative of a sequence of disconnected annual contracts. The RAMS will be able to demonstrate this.



Support for the Transition

Transitioning PWD to a network manager will require external assistance and internal support for change. R4D and its successor are best placed to help the process through its initial stages, not only in supporting the pilot reforms outlined above but also in helping PWD establish the capacity to manage its new role. This capacity will require fewer lower-level technical supervision skills and more high-level policy, planning and contract management skills, with a smaller technical workload. The transition should be planned carefully, ensuring that the contract pilots are used effectively to demonstrate the new skills required, and that reorganisation, recruitment and training draw on the experience. A more detailed transition implementation strategy for the next 5-6 years, with its institutional implications clearly spelled out, could be developed in the remaining months of R4D.

DRAFT



Construction of 70m x 3m wide Concrete Pavement (Sample)

(Section 2)

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[REDACTED] Construction of 70m x 3m wide Concrete Pavement -
[REDACTED] (Section 2)

REPUBLIC OF VANUATU
MINISTRY OF INFRASTRUCTURE AND PUBLIC UTILITIES
PUBLIC WORKS DEPARTMENT

1. DEFINITIONS

"Contingency" means an amount included, usually as a percentage of the amount for items of work and this amount is to be used at the sole discretion of the Engineer for the Works mainly for minor additional work. This sum should in no manner be considered due to the Contractor unless the Engineer has authorised a payment from this item.

"Contractor" means the person named in the Agreement and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee.

"Contractor's Equipment" means all apparatus, machinery, vehicles, facilities and other things required for the execution of the Works but does not include Materials or Plant.

"Cost" means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overheads and similar charges, but does not include profit.

"Day" means a calendar day.

"Employer" means the person/organisation named as employer in the contract agreement, Clause 2 and the legal successors in title to this person/organisation.

"Employer's Representative" means the Employer's authorised representative whom is named in the contract.

"Engineer" means the Employers's Representative authorised representative whom is named in the contract and can approve Works, Variations and payments up to 1M Vatu.

"Force Majeure" means an exceptional event or circumstance: which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party.

"Materials" means things or all kinds of materials intended to form or forming part of the permanent work.

"Party" means either the Employer or the Contractor.

"Site" means the place provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.

"Variation" means a change to the Specification, Bills of Quantities, Schedule of Works and /or Drawings (if any), which is instructed by the Employer under Sub-Clause 5.4.

1

[REDACTED] Construction of 70m x 3m wide Concrete Pavement -
[REDACTED] (Section 2)

"Works" means all the work and design (if any) to be performed by the Contractor including temporary work and any Variation.

2. CONTRACT AGREEMENT

PROJECT TITLE: [REDACTED] Construction of 70 x 3m wide Concrete Pavement - Balap
[REDACTED] (Section 2)

CONTRACT NO: [REDACTED]

CONTRACT VALUE (Vatu): VUV [REDACTED] (Four Million, Four Hundred and Twenty Nine
[REDACTED] Thousand, One Hundred and Forty Vatu) Vatu, inclusive VAT, unless varied in accordance
with this contract. The final contract sum and payments will be based on measurement of
actual quantities constructed as per Clause 4.3 of this Agreement.

THIS AGREEMENT is made on the [REDACTED]

BETWEEN the Public Works Department of the Ministry of Infrastructure and Public Utilities representing Vanuatu Government (hereinafter called "the Employer").

AND

[REDACTED]

Hereinafter called the "Contractor" and trading under the name of:

[REDACTED]

WHEREAS THE EMPLOYER AND THE CONTRACTOR AGREE AS FOLLOWS:

2.1 Contract Document

The following documents shall form part of this Contract Document:

- (a) This Agreement
- (b) Contract Data
- (c) The Bill of Quantities
- (d) The Schedule of Works
- (e) The Specification
- (f) The Drawings
- (g) Any Addenda issued prior to the execution of this Agreement
- (h) The Declaration on past criminal offences and current criminal charges.

2.2 Term and Contract Sum

2



Construction of 70m x 3m wide Concrete Pavement - (Baja) (Section 2)

The Contract will be for the period of 90 days commencing 14 days from the date of this contact agreement.

During this time the Contractor shall complete the following works: **Embrym IBC (M)**
Construction of 70 x 3m wide Concrete Pavement - (Baja) (Section 2)

This is a Schedule of Rates contract and the approved contract value is up to VUV 4,429,140 (Four Million, Four Hundred and Twenty Nine Thousand, One Hundred and Forty Vatu) Vatu, inclusive VAT, unless varied in accordance with this contract. The final contract sum and payments will be based on measurement of actual quantities constructed as per Clause 4.3 of this Agreement.

3. OBLIGATIONS OF THE CONTRACTOR

3.1 Contractor's Representative

The Contractor under this Contract shall nominate and write to the Employer who will represent and be authorised to act for and on behalf of the Contractor. Should the Contractor wish to change the representative, he shall do so in writing. *Any loss resulting from failure to do so will be entirely the responsibility of the Contractor.*

3.2 Completion

The Contractor shall attend to the works starting from the date shown in Clause 2 above until the works have been completed to the satisfaction of the Employer's Representative nominated Engineer.

3.3 Implementation

3.3.1 Commencement and Completion

The Contractor shall start the works under the contract no later than the date shown in Clause 2.2 and finish within the number of days shown in Clause 2.2 and to the satisfaction of the nominated Engineer.

3.3.2 Community Consultation

The contractor shall contact the custom chief(s) within the custom boundaries in which the work section falls and may make agreements with the chief and community concern:

- i. recruitment of labour,
- ii. Community group assistance in executing the works.

3.3.3 Implementation Work plan

The contractor shall prepare a work plan for the implementation of the works under the agreement for approval by the Engineer before starting works. Only after approval of the work plan the Engineer can approve payment of mobilisation advances.

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Construction of 70m x 3m wide Concrete Pavement - (Baja) (Section 2)

3.3.4 Setting out and quality control aids

The contractor under this contract agreement shall provide or prepare all templates and materials for setting out. The Contractor may seek the Engineer's assistance and explanation..

3.4 Particulars of Works and Work Methods

The Employer and Contractor agree that the Works are as described in the Schedule of Works and the BoQ attached. The Contractor shall follow the Specifications as attached to this contract document. As much as possible the Contractor will make use of local resources (materials, labour).

3.5 Community Sub-Contracts and Unskilled Labour

3.5.1 Hire within Communities

The Contractor will hire unskilled labour from the communities surrounding the site of work. If the contractor cannot find enough people interested to work, he may hire people from other communities.

The Contractor depending on the outcome of Clause 3.3.2 and depending on the task may sub-contract work to groups. The Employer can assist the Contractor with standard community contract formats

3.5.2 Employment of Women

The Contractor shall make every effort to employ women or Women's community groups.

3.6 Conditions of Employment

The Contractor is bound by the labour regulations in force in Vanuatu in respect of hours and conditions of work, wages and benefits and general health and safety precautions, including child labour law.

3.7 Characters of Contractor's Employees

The Contractor shall take every precaution that all persons employed by him/her shall be sober and honest persons and will not employ any person if a reasonable objection is taken by or on behalf of the Employer.

3.8 Employment Records

The contractor shall keep full, complete, and accurate daily records of the employment of labour (workers employed) at the work site (Muster Rolls). These records shall include the name, age, gender and home village. These records shall be available for inspection at all reasonable times.

3.9 Insurance

4



Construction of 70m x 3m wide Concrete Pavement -
(Section 2)

The Employer shall, in the name of the Contractor, obtain workman's compensation insurance.

3.10 Equipment Provision

The Contractor shall ensure that all tools and equipment and any other items used in carrying out the works are mechanically sound, and hereby agrees to indemnify the Employer against all liability in the event of damage to equipment rented from sources other than the Employer. In case the Employer provides the equipment, the Contractor shall keep records of equipment usage. These records shall be available for inspection at all reasonable times.

3.11 Taxes and levies

The Contract Sum is inclusive of VAT. If requested, the Employer will assist the Contractor to register for VAT such that the Contractor can claim back any VAT paid on materials purchased for the works.

3.12 Mode of Payments

Payments will be issued in Vanuatu Vatu through a bank transfer to the Contractor's bank account. The Contractor shall provide bank account details in writing for a National Bank of Vanuatu account, upon signature of the Contract.

The Contractor shall use the PWD payment(s) towards the cost of implementing the Contract.

4. OBLIGATIONS OF THE EMPLOYER

4.1 Employer's Representatives

4.1.1 The Engineer

The Engineer means the Employer's Representative authorised representative whom is named in the contract who will administer the contract and act on behalf of the Employer. The Engineer may authorise payments up to 1M Vatu (one million Vatu). The Engineer will not further delegate financial delegations granted to him.

4.1.2 Site Inspector

A Site Inspector (SI) will be assigned to the site to assist the contractor with measurements, setting out and works organisation and will be an Employer's employee. The SI will have no financial authority under the Contract. The Engineer supervises the SI.

4.2 Instructions and Reports

4.2.1 Instructions

The Engineer shall issue all necessary instructions to the Contractor in writing.

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Construction of 70m x 3m wide Concrete Pavement -
(Section 2)

4.2.2 Progress Reports

The Engineer and Contractor shall hold regular monthly progress meetings to review work progress and revise the general work plan and produce a "Monthly Progress Report" with the minutes of the meeting as an annex to the report.

4.3 Payments for Measured Works

4.3.1 Measured Works

Payments will be made on the basis of actual work done as measured and agreed by the Contractor and the Engineer on a jointly signed and agreed measurement sheets. The Engineer will certify the value of works completed.

4.3.2 Payment

The Employer will pay to the Contractor on a monthly basis. Payments will be made within 21 days from the date the Contractor submits an invoice for payment with the payment amount based on the payment certificate.

4.4 Wages of Staff, Day workers and Sub-Contractors

If it is alleged to the Employer that the Contractor has failed to pay wages and/or failed to pay the minimum legal wage, the Employer shall be entitled to demand from the Contractor reasonable proof of payment of wages to its employees, unskilled workers and sub-contractors. The Contractor shall allow the Employer to inspect the Contractor's records. In the event that it is shown that the Contractor has breached the stipulations in this clause, the Employer shall be entitled to make direct payment to the workers and deduct the equivalent sum due to the Contractor.

The Employer shall also be entitled to recover any costs associated with the making of such direct payments to the Contractor's workers.

5. GENERAL CONDITIONS

5.1 Language of Contract

The governing language of this contract is English.

5.2 Provision of Materials

The Employer may choose to provide construction materials, which are required to be sourced in Port Vila or Santo to the Contractor. A materials handover form will be required to be signed by the Contractor and Engineer.

5.3 Advance Payments

5.3.1 Payment upon Mobilisation

An advance payment of 0% of the estimated value of works, excluding contingency, may be

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Construction of 70m x 3m wide Concrete Pavement -
Balap (Section 2)

paid to the Contractor and shall be approved for payment in instalments of not more than half a million vatu by the Engineer.

Request for advance payment shall follow the procedure outlined below.

- Estimate the advance required in accordance with agreed percentages or estimated amount (5.3.1).
- Prepare an invoice to PWD and attach copies of the agreements reached during community consultation, signed by contractor and chiefs or communities and endorsed by the Island Stakeholder Committee, and a copy of the approved work plan and schedules

5.3.2 Purpose of the Mobilisation Payment

The advance shall be used for purchase of essential setting out aids and materials to carry out the Works that will not be supplied by the Employer. The Contractor may purchase hand tools and light equipment, but if so required, these items may also be rented from the Employer. The Employer will provide guidance as to the quality and quantity of materials, hand tools and equipment to be purchased and used.

5.3.3 Repayment

The release of the advance payments will be subject to the presentation of an approved work plan as in Clause 4.2 and an Invoice for payment. The advance will be deducted from the monthly payment certificates at the percentage of measured works to the total value of works.

5.4 Variations

A variation is defined to include any change to the Specification, Drawings, Bills of Quantities or Schedule of Works included in the Contract.

- The Engineer may approve and issue Variations within the overall Contract Value.
- Variations above the Contract Value are under the control of the Employer and the Contractor must act only on an authorised Variation from the Employer. Variations above the Contract Value will be issued through a variation order endorsed by the Engineer, approved by the Employer's Representative and countersigned by the Contractor.

5.5 Completion Certificate

At the end of the contract the Engineer shall issue a Completion Certificate, only if the Contractor has completed the works as per the contract agreement and specifications and shall discharge the Contractor of his obligations under this agreement. The Completion Certificate is required to approve the final payment of the contract.

5.6 Settlement of Disputes

The Employer together with the Island Council of Chiefs (ICC) and the Province will establish

Construction of 70m x 3m wide Concrete Pavement -
Balap (Section 2)

a process for dealing with community grievances relating to the presence of contractors. This will as much as possible follow existing customary grievance resolution processes but shall not contradict any of the conditions of the Contract.

In the event the Community (Group) or individual wishes to bring any dissatisfaction or complaint in relation to the works or the contract to the Employer, these steps should be followed:

Step 1: The Contractor and Community (Group) or individual, in presence of the CoW, the Community Representative and the Community Group Foreman will convene a meeting in which the parties attempt to solve the disagreement.

Step 2: If this does not lead to all parties agreeing, the party can lodge a formal complaint with the ICC, who then convenes a meeting with the party disagreeing in which the Employer's Representative will be present to seek a solution.

Step 3: Failing this, either party may lodge a formal complaint with the Province. A formal meeting is convened in which the complainant, the Employer, the ICC and the Province are represented. In case this does not lead to a satisfactory resolution, the Province shall direct the Complainant as to the course of (legal) action to be followed.

For all Steps a Register of Complaints shall be set up and include:

1. Time and date of complaint
2. Type of communication (face to face, telephone, written, etc.)
3. Person(s) to whom the complaint is directed
4. Name, address and contact details of complainant
5. Details of complainant
6. Action planned and taken to settle the matter
7. Confirmation that resolution has been reached to the satisfaction of all Parties.

The Employer and the Province shall be responsible for the Register of Complaints and its safekeeping. The Employer shall keep the original and the Province shall keep a copy. In the event that the resolution of dispute through the mediation process is not possible following fair and reasonable efforts by the Parties then either Party may enforce the Contract in the courts of the Republic of Vanuatu.

5.7 Termination

This Contract may be terminated by either party on the provision that 14 days notice is given in writing. The Contractor shall be obliged to continue working up to an agreed date of termination of the contract.

5.8 Suspension of works

The Employer may suspend the work, or any portion thereof, at any time by notice in writing to the Contractor. Such notice shall fix the date on which the work shall be resumed.



Construction of 70m x 3m wide Concrete Pavement -
(Section 2)

The Contractor shall be allowed an extension of Contract Time for that period.

5.9 Extension of Time

The period of this Contract may be extended if agreed by both Parties in writing and duly signed by the Employer and the Contractor.

5.10 Signboards

The Contractor shall erect 1 signboard(s) on the site at locations designated by the Engineer's Representative. The Employer shall provide the Contractor with a signboard template and BoQ rate shall be used to pay for the erection of the signboard.

5.11 Third Party Claims

The Contractor shall be solely liable for all claims by Third Parties in the course of performing this Agreement and under no circumstances shall the Employer be held liable for such claims by Third Parties.

5.12 Force Majeure

In the event of the Works being hampered as a result of Force Majeure that is being unavoidably and unforeseeably hindered in the execution of the Works, the Contractor shall give immediately a written report of such hindrance to the Employer, who reserves the right to accept or reject such claim.

Not later than fifteen (15) days after the Contractor, as a result of an event of Force Majeure, have become unable to execute a material part of the Works, the Employer and the Contractor shall consult with each other with a view to agreeing on appropriate means to be taken in the circumstances. If a Force Majeure event or situation occurs and continues for thirty (30) days from the date when it first occurred the Employer and the Contractor may agree to revise or terminate the Agreement hereto.

Upon termination of the Agreement hereto as a result of Force Majeure, the Employer shall not be liable for any payment to the Contractor except for the execution performed and for expenditures incurred for activities related to procurements prior to the date of occurrence of the Force Majeure event or situation, plus those expenses incidental to the orderly liquidation of the Contractor's work. For the realisation of such payments any advance payments have to be taken into consideration.

For clarity, Force Majeure events shall include but not be limited to:

1. Extreme weather events such as a cyclone, rainfall greater than a 1 in 25 year rainfall as defined from records of the nearest weather station to the site.
2. Community conflict within the site or area where materials are being extracted for use for the Works, which cannot be resolved through the Dispute Resolution

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Construction of 70m x 3m wide Concrete Pavement -
(Section 2)

Committee for the contract and which is judged by the Employer and Contractor to place the Works, Plant, Materials and Contractors staff or casual labour at risk.

5.13 Fraud and Corruption

Contractors must observe the highest standard of ethics during the procurement and execution of the Contracts.

It is the Employer's policy to require that contractors, suppliers, and contractors and their agents (whether declared or not), personnel, subcontractors, sub-consultants, service providers and suppliers, observe the highest standard of ethics during the procurement and execution of such contracts. For the purposes of this contract, the terms set below apply:

- (i) "corrupt practice" is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) "fraudulent practice" is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (v) "Obstructive practice" is
 - (a) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
 - (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under sub-clause (e) below.

(II) The Employer will reject a proposal for award if it determines that the contractor recommended has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;

(III) If the contractor has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract, its contract will be terminated and its actions reported to the Government of Vanuatu

(IV) The Employer will sanction a party or its successor, including declaring ineligible, either indefinitely or for a stated period of time, to participate in GoV activities if it at any time determines that the firm has, directly or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for, or in executing, a contract.

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[Redacted] Construction of 70m x 3m wide Concrete Pavement -
[Redacted] (Section 2)

(V) The Contractor will be responsible for keeping receipts of all supplies and services procured in Vanuatu and such other actions as may be required by the taxation authorities in connection with the Contract and for seeking reimbursement of any taxes levied. Contractors shall permit the Employer to inspect any accounts and records and other documents relating to the quotation submission and contract performance, and to have them audited by auditors appointed by the Employer.

The Employer accepts no responsibility, either directly or indirectly, for the reimbursement of taxes levied on the Contractor. It is the Contractor's sole responsibility to obtain reimbursement from the relevant authorities for these charges if they have been levied.

The Contractor will be responsible for keeping receipts of all supplies and services procured in Vanuatu and such other actions as may be required by the taxation authorities in connection with the Contract and for seeking reimbursement of any taxes levied.

5.14 Past criminal offenses and current criminal charges

The Contractor must complete and sign the "Declaration on past criminal offences and current criminal charges" attached to this agreement.

[Redacted] Construction of 70m x 3m wide Concrete Pavement -
[Redacted] (Section 2)

6. AGREEMENT

IN WITNESS WHEREOF the Parties hereto have caused this agreement to be entered into the day, the month and year first above written.

Signed for and on behalf of the Employer:

By: [Redacted]	Witnessed By: [Redacted]
Signature: [Redacted]	Signature: [Redacted]
Designation: <u>Acting DG</u>	Designation: [Redacted]
Date: <u>10/04/2017</u>	Date: <u>10/04/2017</u>



Signed for and on behalf of the Contractor:

By: [Redacted]	Witnessed By: [Redacted]
Signature: [Redacted]	Signature: [Redacted]
Designation: [Redacted]	Designation: [Redacted]
Date: <u>25/04/17</u>	Date: <u>25/04/17</u>



019/17/WK/IBC/AY/MA/RR/PWD/PWJ Construction of 70m x 3m wide Concrete Pavement -
Balap (Section 2)

CONTRACT DATA

Contract No. 019/17/WK/IBC/AY/MA/RR/PWD/PWJ

Note: The Contractor shall comply with the following Contract Data which shall be read together with this Contract Agreement.

1. The following Documents form part of the Contract Agreement;

- This Agreement
- Contract Data
- Bill of Quantities
- Schedule of Works
- Specifications
- Drawings
- Any Addenda issued prior to the execution of this Agreement
- The Declaration on past criminal offences and current criminal charges.

2. The Employer is:

Director General
Ministry of Infrastructure and Public Utilities,
Nasituan Building, PMB 9057, Port Vila
Telephone: 22790, Fax: 27714

3. The Employer's Representative is:

Director
Public Works Department
Nasituan Building, PMB 9044, Port Vila
Telephone: 22888, Fax: 24495
e-mail: pwdho@vanuatu.com.vu

4. The Engineer is:

Fred Siba
Public Works Department –Malampa Province
P.O Box 09, Lakatoro, Malekula
5438302
e-mail: fsiba@vanuatu.gov.vu

5. The language of the Contract is the English language.

6. The Law that applies to the Contract is the Law of the Republic of Vanuatu.

7. The Currency of the Contract is the Vanuatu Vatu (VUV).

8. The Start Date of the Contract is 14 days from the date of this contact agreement.

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019/17/WK/IBC/AY/MA/RR/PWD/PWJ Construction of 70m x 3m wide Concrete Pavement -
Balap (Section 2)

9. The Contract Period is for 90 days.

10. The Completion Date is 19 August 2017

10. The maximum insurance cover for physical property, injury and death is VUV 1,000,000.

11. The estimated Total Value of works is: VUV 4,429,140 (Four Million, Four Hundred and Twenty Nine Thousand, One Hundred and Forty Vatu), inclusive VAT, paid in accordance with Clause 4.3 of the Contract Agreement.

12. These Contract Data have been read and fully understood by the Contractor.

13. Specified Bank Account

Name of Bank: National Bank of Vanuatu

Branch: Lakatoro

Account Name: JS Construction

Account Number: 0094299000

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PROPOSAL RENCANA KAWASAN PWD RW 001/010 Construction of 70m x 3m wide Concrete Pavement - **Balai** (Section 2)

BILL OF QUANTITIES

Construction of 70 x 3m wide Concrete Pavement - Balai (Section 2)								
ITEM	DESCRIPTION	UNIT	CONTRACT QUANTITIES		RATE (VUV)		CONTRACT AMOUNT (VUV)	
			INITIAL	REVISED	INITIAL	REVISED	INITIAL BoQ	REVISED
BILL A.1: PRELIMINARIES AND GENERAL ITEMS								
A1.3	Mobilization to Site	LS	1,00	1,00	0	-	-	-
A1.3	Demobilization from Site	LS	1,00	1,00	0	-	-	-
A1.4	Provide material and erect project announcement board to specification	LS	1,00	1,00	10,000	10,000	10,000	10,000
A1.6	Provide traffic warning safety equipment and erect for traffic accommodation	LS	1,00	1,00	10,000	10,000	10,000	10,000
A1.9	Workplace Health and Safety	LS	1,00	1,00	100,000	100,000	100,000	100,000
A1.10	Environmental Protection	LS	1,00	1,00	50,000	50,000	50,000	50,000
Total Bill A.1: PRELIMINARIES AND GENERAL ITEMS							170,000	170,000
BILL B.2: SETTING OUT								
B.2.1	Erect Traffic Warning/Safety Signs and Set Out Road Horizontal Alignment/Re-establish Road Centre Line and Cross-Sections	m	90,00	90,00	20	20	1,800	1,800
Total Bill B.2: SETTING OUT							1,800	1,800
BILL C.3: SITE CLEARANCE								
C.3.1	Erect Traffic Warning/Safety Signs and Clear Bush and/or Cut Grass and Local Disposal	m ²	420,00	420,00	12	12	5,040	5,040
Total Bill C.3: SITE CLEARANCE							5,040	5,040
BILL 7: EARTHWORKS								
7.2	Manual excavation of medium hard soil	m ³	202,00	202,00	872	872	176,144	176,144
7.6	Backfilling by appropriate material behind retaining and other structure and compaction in layer by layer	m ³	70,00	70,00	872	872	61,040	61,040
Total Bill D.7: EARTHWORKS							237,184	237,184
BILL B STONE MASONRY WORKS								
8.2	Construct wet stone masonry (1:4 mortar) including mixing, placing, and curing	m ³	88,90	88,90	15,752	15,752	1,400,353	1,400,353
Total Bill E.5: CULVERT WORKS							1,400,353	1,400,353
BILL 9 CEMENT CONCRETE WORKS								
9.2	Cement Concrete Works including supply, mixing, placing, compacting and curing all complete (1:2:4)	m ³	27,00	27,00	26,567	26,567	717,309	717,309
9.6	Supply, cut and lie rebars in reinforced concrete	kg	2,100,00	2,100,00	469	469	984,900	984,900
Total Bill F.6: MAINTENANCE WORKS							1,702,209	1,702,209
BILL G.7 MISCELLANEOUS WORKS								
	Coral Bedding	m ³	21,00	21,00	2,977	2,977	62,517	62,517
Total Bill G.7: MISCELLANEOUS WORKS							62,517	62,517
TOTAL ORDERED WORKS ALL BILLS:							3,579,103	3,579,103
CONTINGENCY:		10%					357,910	357,910
VAT		12.5%					492,127	492,127
VARIATION OF CONTINGENCY:		Enter 1 to use the contingencies:						-
VARIATION OF CONTRACT SUM:								-
TOTAL (UPDATED) CONTRACT SUM:							4,429,140	4,429,140

PROPOSAL RENCANA KAWASAN PWD RW 001/010 Construction of 70m x 3m wide Concrete Pavement - **Balai** (Section 2)

SCHEDULE OF WORKS

Construction of 70 x 3m wide Concrete Pavement - Balai (Section 2)											
Activity:		Construction of 70 x 3m wide Concrete Pavement - Balai (Section 2)									
Location:											
Length of Pavement:		70 m			Depth of pavement:		0.125 m				
Width of pavement:		3 m									
Item	Description	Unit	Length	Width	Depth	No.	Weight (kg/m ²)	Area (m ²)	Total Qty	Unit rate(VUV)	Total VUV
B.2.1	Erect Traffic Warning/Safety Signs and Set Out Road Horizontal Alignment/Re-establish Road Centre Line and Cross-Sections	m	90	1	1.00	1			90.00	20	1,800.00
C.3.1	Erect Traffic Warning/Safety Signs and Clear Bush and/or Cut Grass and Local Disposal	m ²	70	3	1.00	2			420.00	12	5,040.00
7.20	Manual excavation of medium hard soil for Conc. Pavement	m ³	70	3	0.15	1			32.00	872	27,904.00
7.20	Manual excavation of medium hard soil for shoulders	m ³	70	1.5	0.20	2			42.00	872	36,524.00
7.20	Manual excavation of medium hard soil for side drains	m ³	70	1.4	0.05	2			128.00	872	111,616.00
7.60	Backfilling by appropriate material behind retaining and other structure and compaction in layer by layer	m ³	70	2	0.25	2			70.00	872	61,040.00
8.20	Construct wet stone masonry Drain (1:4 mortar) including mixing, placing, and curing	m ³	70	1.4	0.09	1	0.41	57.40	15,752		904,164.80
8.20	Construct wet stone masonry Shoulder (1:4 mortar) including mixing, placing, and curing	m ³	70.00	1.5	0.15	2		31.50	15,752		496,188.00
9.20	Cement Concrete Works including supply, mixing, placing, compacting and curing all complete (1:2:4)	m ³	70	3	0.13	1		27.00	26,567		717,309.00
9.60	Supply, cut and lie rebars in reinforced concrete	m ³	70	3	0.13		10	2,100.00	469		984,900.00
	Coral bedding	m ³	70	3	0.10			21.00	2,977		62,517.00



Construction of 70m x 3m wide Concrete Pavement -
(Section 2)

SPECIFICATIONS

Specifications for Small Scale Island Based Contractors (IBC)



DRAWINGS

DECLARATION



Declaration on past criminal convictions and current criminal charges

I, the Contractor, solemnly declare that:

1. I have not been convicted of any criminal offence
2. I have not been charged of any criminal offence

Signed for and on behalf of the Contractor

By: 

Signature: 

Designation: 

Date: 

If the above is not applicable, please cross out the above, and complete and sign the following:

I, the Contractor, declare that I have been convicted and/or charged of the following criminal offence(s)

Date of the criminal conviction / criminal charge	Description of the criminal conviction / criminal charge

I understand that it is my responsibility to inform PWD of any changes in the circumstances declared above and that my failure to do so may result in the immediate termination of this contract at no loss to PWD.

Signed for and on behalf of the Contractor

By:
Signature:
Designation:
Date:



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ANNEX B: TYPICAL CBC AGREEMENT

CONTRACT TEMPLATE FOR ISLAND BASED CONTRACTORS	
INFORMATION ABOUT AUTHOR	
Document prepared by:	
Date (of preparation of document):	
CONTRACT DATA	
Contract Number:	
Province:	
Island:	
Road Name:	
Road Section:	Km 2.0 to Km 3.0
Section Length (m):	1000
Contract Value VUV (words):	
Contract Value VUV (numerical):	
Contract start date:	01/02/2017
Contract end date:	28/11/2017
Cycle 1 start, end date:	01/02/2017, 30/03/2017
Cycle 1 description:	Grass cutting & Removing obstructions from drainage
Cycle 2 start, end date:	01/04/2017,31/06/2017
Cycle 2 description:	Grass cutting & Removing obstructions from drainage
Cycle 3 start, end date:	01/07/2017, 30/09/2017
Cycle 3 description:	Grass cutting & Removing obstructions from drainage
Cycle 4 start, end date:	01/10/2017,28/11/2017
Cycle 4 description:	Grass cutting & Removing obstructions from drainage
Cycle 5 start, end date:	N/A,N/A
Cycle 5 description:	
Cycle 6 start, end date:	N/A,N/A
Cycle 6 description:	
Footer:	John Lee
Director PWD:	
COMMUNITY DETAILS	
Community Name:	
Community representative 1:	
Community rep. 1 title:	Chief
Community representative 2:	
Community rep. 2 title:	Chairman
Community representative 3:	
Community rep. 3 title:	Vice Chairman
Community representative 4:	
Community rep. 4 title:	
Bank Name:	
Bank Account Number:	
Account Name:	I

DOCUMENT VERIFICATION	
Document checked by (name, surname):	
Document checked on (date):	
Checklist (key components):	<input type="checkbox"/> Contract no.
	<input type="checkbox"/> Road Section
	<input type="checkbox"/> Section Length
	<input type="checkbox"/> Contract Value
	<input type="checkbox"/> Contract Period
	<input type="checkbox"/> Cycles periods
	<input type="checkbox"/> Community Name
	<input type="checkbox"/> Community Representatives
	<input type="checkbox"/> Bank Account Details
	<input type="checkbox"/> Scope of Works and BoQ
Document approved:	No



Community Based Contract for Labour Services

CONTRACT NUMBER:

ISLAND, PROVINCE:

ROAD NAME:

ROAD SECTION: Km 2.0 to Km 3.0, 1000 m

EMPLOYER: Ministry of Infrastructure and Public Utilities
Public Works Department
PMB 9044
Port Vila, Vanuatu

COMMUNITY:

CONTRACT AGREEMENT

THIS AGREEMENT is made on the _____

BETWEEN

The Employer: **Public Works Department** of the Ministry of Infrastructure and Public Utilities, representing the Government of Vanuatu (hereinafter referred to as PWD)

AND

The Community: _____ (hereinafter referred to as the Contractor)

As represented by:

Name	Title
	Chief
	Chairman
	Vice Chairman

The Community hereby agrees to provide the Services as described in the attached Scope of Works and in accordance with the attached Conditions of Contract for the maximum total contract value of:

vatu (VT [X]) – exclusive of Value Added Tax (VAT)

PWD hereby agrees to pay the Community in consideration of the completed works as appropriate to the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS of the aforesaid, the parties hereto have caused this Contract to be executed in accordance with the Laws of the Republic of Vanuatu.

Signed for and on behalf of the Government of Vanuatu:

Name:

Witnessed By:

Signature:

Signature:

Position: Director PWD

Position:

Date:

Date:

Signed for and on behalf of the Community Group:

Name:

Witnessed By:

Signature:

Signature:

Position: Chief

Position:

Date:

Date:

Community Account Details	Bank name:	Account No:	Account Name:
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PART 1: CONDITIONS OF CONTRACT

GENERAL PROVISIONS

1. The Documents listed in the Contract represent the entire and integrated Contract between the Employer and the Contractor. The Contract is governed by and shall be construed in accordance with the Laws of the Republic of Vanuatu, and the ruling language of the Contract is English.
2. All prior negotiations, representations and agreements, both oral and written, are superseded by the Contract. All correspondence and documents relating to the Contract between the parties and their representatives shall be in English.
3. Neither the Employer nor the Contractor shall assign, in whole or in part, their obligations under the Contract, except with the prior written consent of the other party.
4. In these conditions of contract, unless the context otherwise requires:

Provincial Community Partnership Officer (PCPO) means the person appointed by the employer who supervises maintenance works and certifies the completion, or partial completion, of the works;

Contract means the signed Agreement, and the documentation specified therein, as entered into between the Employer and the Contractor for the provision of the Works;

Contract Cost means the total cost stated in the Contract Agreement both in words and figures;

Contractor means the community engaged to undertake the works as per the contract agreement.

Community Work Supervisors (CWS) means the community nominated person named in the Contract Agreement, who manages the implementation of the contract on behalf of the Contractor;

Community means the group engaged under this contract. The community can represent a village, social group within the village (such as Women's group, sports club), a Nakamal.

Day means a calendar day;

Employer means the Public Works Department (Government of Vanuatu) which is the procuring entity stated in the Contract Agreement;

Contractor's Task means the list of tasks outlined in a contractor's handbook that specifically identifies all the required tasks that the contractor is obliged to undertake;

Variation is an instruction given by the Employer which varies the Contract Agreement.

Senior Community Partnership Officer (SCPO) means the person appointed by the employer to coordinate maintenance works/operations at the national level.

OBLIGATIONS OF THE EMPLOYER

5. Appointment of Community Partnership Officer

The Employer shall appoint a PWD Community Partnership Officer (CPO), who will undertake inspection of the works, undertake measurement of works completed and instruct the Community in efficient work methods to carry out the works.

6. Payment for Works Completed

PWD will pay the Community all sums due under the Contract in response to the Community satisfactorily completing the works.

OBLIGATIONS OF THE CONTRACTOR

7. Scope of Works

The Contractor shall complete the works at the locations specified in the contract, as per the Scope of Works in Part 2 of this contract agreement.

8. Specifications and Standards

The Contractor shall complete the works as per the specifications and tasks outlined in the *Contractors Task and Safety Guide* booklet.

9. Selection of Labour

All persons recruited to undertake works for the Contractor must be 18 years of age or above.

HEALTH AND SAFETY

10. Requirements for Safety Health and Welfare

- (1) The Contractor shall be responsible for all activities on the Site and shall comply with all relevant provisions of the laws in the Republic of Vanuatu.
- (2) Subject to the Agreement, contractor must comply with all the safety regulations outlined in the '*Contractors task and Safety Guide* handbook'.

MEASUREMENT AND PAYMENT

11. PWD shall pay the Community at the end of round of works as per the Timing of Works.

12. The Community shall be only paid for the measured quantity of work achieved for each type of activity according to the Bill of Quantities and not exceeding the quantities therein.

13. The completed site reporting sheet shall be signed by both parties to the contract and this shall form the basis for payment of work quantities completed by the Community.

14. During the contract period, PWD and the Community shall undertake joint measurement after each round of maintenance completed by the community, agree on the final work quantities, and sign a measurement sheet. A Progress Payment Certificate will be prepared by the Employer based on the signed measurement sheet. This certificate will then form the basis for the payment of the agreed works.

15. At the end of the Contract period, PWD and the Community shall undertake a joint measurement, agree on the final work quantities completed by the Community, and sign a measurement sheet for the issuance of a Completion Certificate to enable final payment to be made.

16. PWD shall make payment within thirty days of the date that the final joint measurement sheet is signed and authorised by both parties.

17. PWD shall make payment by depositing all amounts due, directly into the community bank account shown in the Contract Agreement.

GOVERNMENT TAXES

18. No value added tax (VAT) is included in the value of this contract and no VAT is to be charged by the Contractor when invoicing the Employer.

TIMING OF WORKS

19. Contract Period and Frequency of Maintenance

The contract period shall commence on the 01/02/2017 and end on the 28/11/2017. The planned frequency of works is as follows:

Frequency no.	Description of works	From	To
1	Grass cutting & Removing obstructions from drainage	01/02/2017	30/03/2017
2	Grass cutting & Removing obstructions from drainage	01/04/2017	31/06/2017
3	Grass cutting & Removing obstructions from drainage	01/07/2017	30/09/2017
4	Grass cutting & Removing obstructions from drainage	01/10/2017	28/11/2017
5		N/A	N/A



6		N/A	N/A
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CONTRACT VARIATIONS

20. Variation Order

Subject to the agreement of both Parties, PWD may prepare a Variation Order making changes to the services, scope, timing and/or cost of the Contract. Both parties shall sign the Variation Order within seven days of its issue

SETTLEMENT OF DISPUTES

21. Process for Settlement of Disputes

PWD and the Tafea Provincial Administration (PA), Area Councils (AC) and Tribal Councils (TC) have established a process for dealing with community grievances relating to community road works. This will as much as possible follow existing customary grievance resolution processes but must not contradict any of the conditions of the Contract.

In the event that the Community or individual(s) wish to bring any dissatisfaction or complaint in relation to the works or the contract to PWD, these steps should be followed (specified in the CBC Manual):

Step 1: Community(ies) or individual(s), forward their complaints to the Community Works Supervisors (CWS) who will convene a meeting where both parties attempt to solve the disagreement at least 2 days.

Step 2: If this does not lead to all parties agreeing, the CWS then reports this complaint to the PCPO who then forwards this to the Tribal councils (chairman) or Area Councils (Area Secretary) and finally the Provincial Administration (Area Council Strengthening Officer) depending on the seriousness of the case.

Step 3: If the disagreement is about the contract, the PCPO forwards it to the DM and SCPO.

For all Steps above, a Register of Complaints shall be set up and shall include:

1. Time and date of complaint
2. Type of communication (face to face, telephone, written, etc.)
3. Person(s) to whom the complaint was directed
4. Name, address and contact details of complainant
5. Details of the complainant
6. Action planned and taken to settle the matter
7. Confirmation that resolution had been reached to the satisfaction of all parties.

22. Register of Complaints

PWD shall be responsible for maintaining the Register of Complaints and its safekeeping. The Community shall prepare the complaint in the format described above, keep the original and give copies to the parties involved in the resolving the matter.

23. Legal Recourse

In the event that the resolution of a dispute through the negotiation process is not possible following fair and reasonable efforts by the parties then either party may enforce the Contract in the courts of the Republic of Vanuatu.

TERMINATION OF CONTRACT

24. Termination for Default

(1) The Employer may, without prejudice to any other remedy for breach of Contract and by written notice of default sent to the Contractor, terminate the Contract in whole or in part if the Contractor:

- (a) Fails to complete any or all of the Works within the period specified in the Contract Agreement, or within any extension thereof granted by the Employer; or

- (b) Fails to perform any other obligation under the Contract; or
- (c) Has engaged in fraudulent, corrupt, collusive, coercive or obstructive practices in competing for or in executing the Contract.

25. Termination for Convenience

(1) The Employer may, without cause, by written notice instruct the Contractor to terminate its engagement under the Contract. Upon such termination, the Contractor shall be paid for the Works completed and materials supplied up to the date of termination, provided that any such uncompleted Works were not late or otherwise overdue for completion at the date of termination. The Contractor shall promptly make every reasonable effort to effect cancellation upon terms acceptable to the Employer of all outstanding subcontracts.

26. Termination by the Contractor

(1) The Contractor may terminate the contract by giving not less than thirty days' written notice to the Employer in the event that:

- (a) The Employer fails to pay any money due to the Contractor
- (b) The Employer fails to comply with any negotiated settlement



PART 2: SCOPE OF WORKS

N/A
N/A
N/A
N/A
N/A

ITEM	DESCRIPTION	UNIT	QUANTITY IN ONE CYCLE	NOS OF CYCLE	TOTAL QUANTITY	RATE	AMOUNT
1	Grass cutting	m2	6,000	4	24,000	9	216,000
2	Tree pruning	no	-	4	-	1,050	-
3	Excavation of side drains	m	-	1	-	132	-
4	Clearing side drains	m	-	2	-	17	-
5	Remove obstructions from drainage structure	no	2	4	8	660	5,280
TOTAL ORDERED WORKS ALL BILLS:							221,280

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