

OPERATION AND MAINTENANCE (O&M) APPROACH FOR THE PORT VILA URBAN DEVELOPMENT PROJECT ASSETS

A. General

1. Vanuatu is a small island country with limited resources and small agricultural and industrial base. The main sources of revenue are import and export duties, local taxes, and support from development partners. Given the limited financial resources, the allocation for routine operation and maintenance and periodic repairs (together referred as O&M) of public infrastructure is inadequate. The sums allocated to the Ministry of Infrastructure and Public Utilities (MIPU) for the O&M during the past years were often reportedly appropriated for other pressing and emergency needs. This is evident from the dilapidated state of public infrastructure particularly road network, non-existent drainage system, and other public amenities. The O&M allocation for the last five years (2007-2011) averaged approximately 750,000,000 Vt (\$1=88.5 Vt) (Table 1).

Table 1: Public Works Department Operations Budget (2007-2011)

Year	Operations Budget (Vt)
2007	931,997,320
2008	731,330,041
2009	746,930,041
2010	757,220,527
2011	755,216,451

Source: Public Works Department, MIPU.

2. The Port Vila Urban Development Project (PVUDP) will assist the Government of Vanuatu in creating assets in the realm of public goods. The main assets that will be supported by the project include roads, storm water drainage, sludge treatment plant (including biogas and co-power generation units), and public multipurpose-multi-use sanitation and hygiene facilities. Though the construction standards and specifications will ensure its durability, each type of infrastructure would require different levels of routine and periodic repairs. Given Port Vila's importance as the capital city, and the prime business and tourism destination, its public infrastructure will warrant a higher standard of O&M practice. This has been particularly true due to Port Vila's undulating terrains, frequency and intensity of unusual weather conditions, and intensity of asset use.

3. The construction specification of both the newly constructed and upgraded assets will follow standards appropriate to the local conditions, such that the structures can withstand the vagaries of nature and extreme weather conditions. While selecting the design and specifications for the proposed assets of the project, consideration has been given to their future O&M costs, keeping in view best accepted practices.

4. A review of O&M requirement of the proposed project was undertaken to assess the magnitude of the budgetary allocation necessary to ensure the sustainability of investment. The incremental finances, above the normal budgetary allocations, are critical for O&M of the drainage system and road network, both rehabilitated and upgraded. Given the climate-proof design of the structures, it is envisaged that in the initial years the O&M requirements would be lower than for normal structures. For the drainage system and road network, it is estimated that on an average yearly basis, the O&M requirement would be about two percent of the construction cost.

B. Road Network and Drainage System

5. The road and drainage alignments to be rehabilitated and upgraded are located in uneven terrain and with steep slopes intersected by storm water or torrential rain discharge paths. They bring a considerable amount of debris, mud, and other trash. They also lead to erosion and clogging of the drains, a potential source of damage to infrastructure and to private properties.

6. In the Pacific region, the O&M allocations are in the range of 1 to 2 %. However, this allocation is suited to low cost roads with a life span of 10 to 15 years. As the project is contemplating construction standards with a longer life span, and climate- proofed, it would require a higher level of O&M as well, hence a provision of 2% allocation for O&M requirement has been made.

7. It is estimated that with the full development stage, the annual additional O&M allocation for the drainage system will be about Vt.23 million, which would increase in the later years in line with the inflationary trends. Similarly, at the full development stage, it is estimated that about additional Vt.33.0 million will be required annually. It is expected that additional funding requirement will be through municipal taxes, annual vehicle tax, and property tax.

8. A band aid approach will lead to development of surface failures, minor damages developing into pot holes in the roads, and leakages in the drainage system requiring adequate expenditure on timely repair. The implementation consultants will prepare standard operating procedures (SOP) to undertake periodic assessment and monitoring of the O&M requirements, identification of vulnerable critical points needing attention, and identify and mitigate causes leading to damages due to non-weather factors. The consultants will also develop yardsticks for routine, periodic O&M, and repairs.

C. Sludge Treatment Plant, Biogas Plant, and Co-power Generating Unit

9. The review of the current sludge disposal charges, levied on the sludge collection and disposal service providers shows that at present, the municipality charges Vt3,000 (\$35) per cubic meter (m^3). This is about Vt.600 per m^3 less than the breakeven point, and hence the municipality incurs a deficit of Vt.2.5 million per year. If the dumping charges are not increased to bridge the gap, it is expected to reach Vt3.5 in fifteen years.

10. If the project chooses a build-operate-transfer (BOT) option for a 20-year management concession at the current tariff, the concessionaire will not be able to recover the management fees, O&M costs including routine repairs, and replacements costs. It would be worthwhile for a private operator only if the STP charges are enhanced accordingly. At present, the service providers which collect and transport household sludge charge Vt.6, 000 per m^3 to the households/consumers. The present spread of Vt.3,000 represents service providers cost of collection and transportation and their profit. As the new site is closer than the existing dumping site, it is estimated that they would save about Vt.300 per m^3 in transportation costs. This suggests that there is a sufficient margin to the service provider and they will absorb the increase in the sludge disposal charges without burdening the households.

11. The O&M allocation in the project design has been estimated taking into account the technical specification and industry standards. Moreover, the asset is intended to provide services to the users on fees basis. The design consultants at Vanuatu Project Management

Unit¹ will review the rationale for existing user charges and will recommend a pricing policy that would ensure steady flow of net revenues to meet any exigent major repairs and unforeseen eventuality. At present, the market for treated sludge as soil ameliorant does not exist. With the availability of treated sludge, it is expected that its utility by the farming community would generate demand. This would provide additional income to the municipality after full recovery of the operational cost.

D. Public multi-purpose multi-use (MPMU) sanitation facilities

12. The design of the public MPMUs sanitation facilities has followed the similar design principle as for the road and drainage works, i.e., above normal construction standards and quality of materials. Out of the proposed 17 units, ten will be operated and maintained by the municipality while the remaining seven will be operated and maintained by the communities. A financial viability analysis of the units indicates that the facilities will generate significant income over and above the expenditure, including consumables and provision for routine maintenance.

13. An analysis of the estimated expenditure/revenue of the municipality-managed MPMUs suggests that these units will realize significant net income, provided that user charge collection system is improved to ensure transparency and plug leakages, if any. It is estimated that the maintenance of a typical MPMU would cost about Vt.1.5 million annually. Assuming a conservative number of users at 150 per day, and at present user charge of Vt. per user, each of the ten MPMU would earn about Vt.1.2 million annually, with gross revenue or net income of Vt.700,000. The ten units are expected to realize about Vt.7.0 million annually. It may be pointed out that even after cross subsidizing the sludge treatment plant operation, the municipality will be able to self-finance the operational cost of the investment in the public MPMU sanitation facilities.

14. The implementation consultants will develop SOP so that adequate allocations are made to ensure proper periodic repairs out of the net revenues. The consultants will also develop a training program for the operators of the MPMUs on hygienic maintenance, ensuring uninterrupted supplies of the consumables, and accounting procedures.

E. Communal Sanitation Facilities

15. These facilities will be constructed using the same principles as the other components of the project, thus presenting a minimum requirement for future O&M. Each of the recipient communities has undertaken to inter-alia take responsibility for their future O&M. The arrangements for transfer of assets to each community may differ. The implementation consultants will develop training programs for the women's groups to manage the cleanliness, provide consumables, and maintain transparent accounts.

¹ The government will establish a Vanuatu Project Management Unit (VPMU) as a dedicated unit for managing large and nationally significant projects with allocation of budget and core staff.