



Government of Nauru

Appendix D

Asset Management Organization Strengthening

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1. Introduction

Over the past five years, the Govt. of Nauru has implemented a number of initiatives aimed at improving asset management of public sector infrastructure, including adoption of an asset management policy, development of an asset register, creation of the Department of Infrastructure Development (DOID) and on-going implementation of a web-based Geographic Information Mapping system – Maptive. DOID has started undertaking infrastructure condition assessment studies to identify assets in poor operating condition and planning investments into asset renewal/replacement, when asset performance becomes poor. Nauru Utilities Corporation (NUC), which is responsible for managing the electricity, water and sewage treatment infrastructure, also employs modern asset management practices, including measurement of infrastructure assets' operating performance through objective performance indicators and maintaining up-to-date information with respect to all assets owned by the corporation. Infrastructure assets at the fuel storage facility are also under NUC corporate control and the management of these assets has been contracted to a professional company - the Vital Group, with expertise in managing such assets. These assets are inspected annually by qualified professionals, risk assessment is performed and investments into assets with high risk of failure are planned for renewal/replacement.

However, most other government agencies in Nauru do not employ well defined performance indicators and service levels, to monitor infrastructure assets' performance and none of the agencies and SOE's take into consideration public feedback in assessing assets' performance. Asset register prepared in 2018 has not been updated during the past five years. Lack of project planning, use of specifications and standards not suitable for Nauru's harsh operating environment, poor workmanship and absence of quality controls during infrastructure construction, and a general lack of preventative maintenance continue to cause accelerated infrastructure aging and premature impairment of infrastructure assets. Infrastructure inspection performed in October 2023 show a high number of deficiencies in assets' physical condition. The decisions involving investments into infrastructure are made on adhoc basis and therefore the investments fail to yield the best possible outcomes for asset service life, asset performance and economic efficiency.

Most public sector organizations in Nauru lack trained staff to perform asset management activities. The issue of trained staff for maintaining assets is more serious in the case of buildings. There is no central department to manage and maintain the public sector buildings in Nauru.

2. Current Organizational Responsibilities for Infrastructure Asset Management:

Table 1 indicates the existing infrastructure asset management responsibility matrix in Nauru. The top row shows the different categories of infrastructure assets employed for providing public services in Nauru and the first column shows the name of the government department or SOE responsible for managing and maintaining each category of infrastructure assets.

Table 1: Existing Infrastructure Asset Management Responsibility Matrix

	Roads	Sea Walls	Airstrip	Navigation Aids	Commercial Port	Fishing Wharf	Water Production	Water Storage Tanks	Sewage Treatment plant	Electricity Generating Plant	Electricity Distribution Lines	Fuel Storage Tanks	Land fill and Recycling	Telecom Towers	Buildings
Department of Infrastructure Development	■	■													■
Nauru Civil Aviation Authority			■	■											■
Nauru Port Authority					■										■
Fisheries & Marine Resources Authority						■									■
Nauru Utilities Corporation							■	■	■	■	■	■			■
Nauru Rehabilitation Corporation													■		■
ICT Department														■	■
Dept of Education															■
Nauru RON Hospital															■
Police Authority															■
Emergency Services															■
Public Administration															■

As shown in Table 1, the Department of Infrastructure Development is responsible for maintaining the sealed roads and sea walls in Nauru. Nauru Civil Aviation Authority is responsible for managing the airport facilities, including the air strip and the navigation aids. Nauru Port Authority is responsible for managing the commercial port and the Fishing and Marine Resources Authority maintains the fishing wharf, the aquatic center and an outdoor fish market structure.

Nauru Utilities Corporation (NUC) is responsible for managing electricity and water infrastructure and it has recently been also given the responsibility for sewage treatment. NUC also owns fuel storage farm, including diesel, gasoline and aviation fuel storage tanks, but since 2014, the management of these specialized assets has been outsourced to a private firm – Vital Corporation.

Nauru Rehabilitation Corporation (NRC) has the responsibility for land remediation, solid waste management and recycling assets.

Telecommunication services in Nauru are privatized and private corporations exist to provide Internet, telephone and television cable services to public for a fee. These services are regulated by the Regulatory Directorate of the ICT department. ICT department is also responsible for the telecommunications network infrastructure to provide communication & Internet connectivity for the government departments and manages and maintains all the government owned telecommunications infrastructure and IT hardware and software systems. ICT department also maintains a few publicly owned communication towers on which telecom equipment owned by private corporations is installed.

In addition to the infrastructure assets discussed above, buildings are the most critical and highest value infrastructure asset category, employed for provision of services and administrative functions. Currently, each government department and SOE is responsible for managing the buildings under its control. The Education, Health and Public Service Administration sectors are responsible for managing a large pool of building assets.

With exception of NUC, where they have developed internal competencies to effectively manage electricity and water infrastructure, all of the remaining public sector agencies entrusted with management of infrastructure rely on private contractors, whose commercial interests may not be aligned with those of asset owners, for condition assessment of infrastructure assets and advice on maintenance and investment decisions. Most employees within Government of Nauru agencies, entrusted with the maintenance of infrastructure assets, lack the necessary technical skills and depth of experience to effectively carry out the asset management activities.

3. Recommended Organization Changes for Improvement in Infrastructure Asset Management Functions:

The deficiencies in the public sector organization structures in Nauru, need to be addressed through the following initiatives, to remove the remaining barriers, in the path of effective and efficient asset management:

- a) Development and retention of asset management teams, with the asset specific skill sets required to conduct condition assessment, maintenance and corrective repairs to

infrastructure assets, managed by experienced team leaders with competencies in the technical fields, as well as strong project management and contract administration skills.

- b) Establishing clearly defined responsibilities and accountabilities for organizations as well as asset managers, and more specifically, responsibility for various asset management activities, including budgeting, project management, asset condition assessment and maintenance, and asset register updates.
- c) Establishing a process, by which agencies and asset managers responsible for managing public sector infrastructure assets will report pertinent accounting and financial information, related to asset valuation, replacement cost and maintenance cost to the Ministry of Finance at the end of each financial year.

3.1 Development and Retention of Asset Management Teams:

Nauru government agencies engaged in provision of public services would require on going support in form of Technical Assistant for the foreseeable future to develop and retain technical and administrative competencies required for asset management of the service-specific infrastructure, for which they are responsible, such as roads, seawalls, aviation and maritime infrastructure, water and sewage, electricity and telecom infrastructure. Any future initiatives aimed at skill development also need to include safeguards to retain those skills in Nauru, through long-term employment contracts and pay or pension incentives.

Public sector buildings cumulatively represent the highest value public sector infrastructure asset category and there is an opportunity to significantly reduce the effort and cost of developing and maintaining asset management skills required for the building assets, if buildings owned by various government departments are pooled together and a single department is made responsible for managing and maintaining all buildings. Because there is no central department to manage and maintain government buildings, as shown in Table 1, each department currently manages its own pool of building assets, but all departments lack trained staff to perform maintenance and asset management activities. To effectively manage building assets, the team leader needs to be an experienced professional engineer or architect with project management and contract administration background, supported by a team of diverse technical trades, including masonry, carpentry, drywall, floor tile, sheet metal, roofing, electrical wiring, and plumbing skills, to carry out preventative and corrective maintenance activities.

Rather than creating multiple building maintenance teams to serve each department, it would be more cost efficient to delegate the responsibility for managing the entire pool of public service buildings in Nauru to a single team. Since the Department of Infrastructure Development has been created to improve the asset management of infrastructure assets, and this department will require an experienced structural engineer to be the team leader, to effectively manage the roads and coastal protection assets in Nauru, it would make sense for the Government of Nauru to delegate the responsibility for managing and maintaining all public sector buildings currently managed by various government departments to the Department of Infrastructure Development. After this organization, the infrastructure asset management responsibility matrix would look like as shown in Table 2. More specifically, after the propose organization change, Department of

Infrastructure Development will become responsible for managing buildings belonging to the Education, Health, Administration, Emergency Services, Police and ICT departments.

The position of the Asset Management Team Leader in the Department of Infrastructure Development will need to be staffed by an International or Regional Consultant for a period of approximately 5 years. The job description for this position is described below, in Section 3.2.

Table 2: Proposed Infrastructure Asset Management Responsibility Matrix

	Roads	Sea Walls	Airstrip	Navigation Aids	Commercial Port	Fishing Wharf	Water Production	Water Storage Tanks	Sewage Treatment plant	Electricity Generating Plant	Electricity Distribution Lines	Fuel Storage Tanks	Land fill and Recycling	Telecom Towers	Buildings
Department of Infrastructure Development	■	■													■
Nauru Civil Aviation Authority			■	■											■
Nauru Port Authority					■										■
Fisheries & Marine Resources Authority						■									■
Nauru Utilities Corporation							■	■	■	■	■	■			■
Nauru Rehabilitation Corporation													■		■
ICT Department														■	

3.2 Job Description - Department of Infrastructure Development Asset Management Team Leader:

Position Overview:

The overarching objective of this newly created position is to ensure that the Government of Nauru (GON)'s infrastructure assets deliver public services in the most cost effective and efficient manner, resulting in maximum stakeholder satisfaction.

Key Relationships / Interactions:

Internal: Secretary Infrastructure, Government of Nauru Staff members in multiple departments

External: Residents and citizens of Nauru, Various Donor and Lending organizations and their representatives, Consultants, Industry Experts, Equipment vendors and Service Providers, Contractors.

Primary Purpose of the Position:

The Infrastructure Asset Management Team Leader Position is intended to be 5-year term, contract position with GON. During this period the Team Leader, reporting directly to the GON Secretary of Infrastructure, will assume responsibility for all aspects of the GON Infrastructure department's Asset Management program and will also assist GON with capacity building by providing hands-on training to GON staff, so that at the end of 5 year period, the trained staff is fully prepared and ready to assume the duties of this position and independently perform all the asset management duties.

Responsibilities:

The primary responsibilities of the Infrastructure Asset Management Team Leader will include:

- Serve as the Team Leader and Key Resource Person for GON in implementation of the GON asset management policy, strategies and procedures;
- Perform public surveys and service delivery audits to confirm public satisfaction with the services delivered by GON through the infrastructure assets in various sectors;
- Undertaking infrastructure capacity and condition assessments to identify capacity gaps and/or assets in poor condition which may adversely impact satisfactory delivery of public services;
- Implementation of infrastructure maintenance program to ensure infrastructure assets continue to perform their intended roles and functions and provide services effectively and cost efficiently, throughout their life cycle;
- Undertake detailed analysis of asset related information (including spatial) and provide advice/reports to support a variety of essential business functions e.g. make recommendations in relation to asset renewal and replacement and maintenance planning;
- Investigate asset failures and incidents of premature asset impairment to identify root causes and take pre-emptive steps to prevent such failures and impairment in the future by making use of the lessons learned;
- Prepare asset management plans for various classes of infrastructure assets, selecting the most efficient alternatives for asset repairs, renewal and refurbishment or replacement;

- Development and implement policies and strategies aligned with best-in-class asset management practices;
- Maintain up to date information in the asset register and assist with valuation of infrastructure assets;
- Establishing optimal inventory levels, minimum re-order points and optimal batch size for procurement of spare parts and inventories for different asset classes;
- Preparing technical specifications for infrastructure assets and spare parts by taking into account the asset's operating environment and climate conditions;
- Preparing tender documents for procurement of goods and services, evaluating tender bids and making recommendations to GON for award of tenders;
- Developing and implementing safety regulations for work on and near the infrastructure assets;
- Supporting the application of and demonstrably engaging in the GON's gender equity, cultural diversity and ethical practice policies;
- Assisting GON with capacity building by developing and implementing training programs in Infrastructure Asset Management.

Qualifications and Selection Criteria:

- A degree from an Accredited University in Civil Engineering with at least 10 years experience in infrastructure asset management;
- Full knowledge and familiarity with the international asset management standards – PAS 55 and ISO 55000.
- Ability to read and understand standard financial reporting including budgeting and accounting ledger transactions;
- Demonstrated experience in the use of corporate asset systems, financial systems and workflow management;
- Competence in interpreting technical information and giving direction based on this; knowledge of asset management requirements;
- Understanding of project management principles and their application;
- Experience in contract administration related to infrastructure construction projects;
- Ability to allocate available resources and prioritise works based on standards;
- Commitment to internal and external customers demonstrated through the provision of timely, reliable and expert advice on matters within the area of responsibility;
- Proven ability to build positive relationships and consult, negotiate and communicate with all levels of management and staff, government agencies, stakeholders and the community, both verbally and in writing;
- Ability to communicate effectively both verbally and in writing with a range of audiences; and
- Demonstrated competence in managing a majority of the infrastructure assets owned by GON, including buildings, roads, coastal protection infrastructure, including sea walls and rip raps.

3.3 Asset Management Activities and Responsibilities

The following asset management procedures are aimed at completing the following tasks with the objective of achieving cost efficient and effective use of infrastructure:

- maintaining complete and up-to-date information related to infrastructure assets;
- determining the operating condition of assets, using accurate and objective techniques;
- accurately establishing the investment requirements for asset maintenance, renewal and replacement;
- when assets present unacceptably high risk of failure in service, developing the capital budgets based on optimal timing and scope of investments needed for asset renewal or rehabilitation and environmentally friendly disposal of assets retired from service.

Asset Records Management:

For each infrastructure asset, the department responsible for asset management shall create and maintain a records file folder to keep all pertinent information related to the asset, including the technical specifications, design drawings, as-built drawings and the maintenance plan for the asset, for future reference. Asset records can be maintained in form of an electronic file folder, in which scanned copies of the documents can be filed.

The department responsible for asset management shall also keep an asset log book, in form of an electronic diary, in which all pertinent operating information about assets should be recorded chronologically, including asset performance records in meeting service levels, asset maintenance records, asset condition assessment results and asset failure mode (if the asset fails in service).

The log book records are intended to serve as the institutional memory. Matching the asset requirements to its service delivery strategy, should result in the assets being correctly specified with respect to the required capacity, performance and environmental resiliency.

Asset Procurement Plan - Technical Standards and Specifications:

The department responsible for managing the infrastructure shall ensure that during equipment procurement, construction and installation of new infrastructure assets, the technical specifications and construction standards take into account any lessons learned from use of similar assets in the past, including asset operation in harsh climate and corrosive operating conditions. For equipment housing and enclosures, either stainless steel should be specified or thickness of equipment enclosure should be suitably increased to compensate for the high corrosion rate and/or corrosion resistant coatings and paints should be specified.

It is highly desirable to employ standardized specifications and construction designs for most assets and to achieve this objective, construction standards and standardized procurement specifications should be developed for infrastructure assets. There is also a need for national building code to standardize construction.

Asset Maintenance Plan:

For each asset in service, the department responsible for the infrastructure shall prepare and implement an asset maintenance plan. The maintenance plan will include specific maintenance activities to be performed and their interval. Asset maintenance plan should be prepared by taking into account the equipment manufacturer's recommendations. PRIF Asset Condition Assessment Methodology provides guidelines for developing maintenance plans for various assets.

The department responsible for asset management shall perform all the maintenance activities required by the maintenance plan and keep records of maintenance performed in the log book. For each asset in service, the department responsible for asset management shall prepare a maintenance budget each year for the following year.

Asset Disposal Plan:

For each asset in service, the department responsible for asset management shall prepare and implement an asset disposal plan. The asset disposal plan will include specific activities to be performed in order to salvage recyclable components and dispose off the waste in a safe and environmentally friendly manner, when an asset is retired from service, particularly when assets with hazardous materials are retired from service. Appropriate disposal costs related to the assets being retired should be included in cost estimates of asset renewal projects.

Benchmarking Asset Functional Performance:

For each asset class, the department responsible for asset management shall establish transparent and objective criteria for benchmarking service level performance in form of asset functional performance ratings. The functional performance ratings should be determined based on the relevant service level indicators for that asset, such as number of safety incidents, accidents, reliability, operating costs, public complaints, stakeholder interviews/survey results etc.

Guidelines for benchmarking service level for asset classes are documented in PRIF Methodology for Condition Assessment of Assets. Where service level benchmarking requires stakeholder/asset user surveys, both women and men should be included in the survey in equal ratios, as much as possible.

The department responsible for asset management shall perform asset functional performance assessment for each asset class, once a year and record the rating for each asset class in the asset log book.

Benchmarking Asset Physical Condition Ratings:

For each infrastructure asset, the department responsible for asset management shall establish transparent and objective criteria for condition assessment of the assets. Asset condition assessment criteria shall include all relevant information on asset condition collected through visual inspections and testing. Guidelines for asset condition assessment and determination of assets Condition Index are documented in PRIF Methodology for Asset Condition Index.

The department responsible for asset management shall perform asset condition assessment at the required intervals and record the asset condition score for each condition indicator as well as the calculated Asset Condition RSP for each asset in the asset register.

Unit Costs for Asset Replacement and Renewal:

For each asset in service, the department responsible for asset management shall maintain accurate unit costs for preparing cost estimates for asset replacement or component renewal.

Asset replacement cost estimate shall be prepared by applying suitable adjustment for inflation to the cost of most recent acquisition of an identical or similar asset for which asset acquisition cost is available; and by including the full cost of asset acquisition, including procurement, transportation, construction, testing and commissioning of asset, as well as cost of disposal of existing assets, that are being retired and replaced with the new assets.

Per Unit costs during 2019, employed in the asset register, are documented in PRIF Methodology for Infrastructure Asset Condition Assessment.

Plan for Asset Renewal or Replacement:

For the assets determined to be in “poor” or “very poor” condition, the department responsible for asset management shall prepare a new project proposal (NPP) for asset renewal or replacement by considering all alternatives and selecting the optimal solution. Please make sure the project specifications take into account the harsh corrosive operating environment in Nauru and any other site-specific operating requirements. During preparation of asset renewal plan, institution strengthening and capacity building - through knowledge transfer and skills development must be incorporated into the asset procurement plans.

For assets involving complex design, consideration should be given to extended parts and labor warranties (3 to 5 years), including on-the-job training for local staff in asset operations, troubleshooting and repair and performing maintenance. For the assets being retired from service, adequate funding should be allowed for proper disposal of the assets being removed from service.

The department responsible for asset management shall submit to the Department of Infrastructure and Ministry of Finance a list of the planned investment projects.

Maintain Asset Register with Current Information:

The purpose of maintaining asset register populated with current information is two-fold:

- to provide management control over the assets of significant value and accurately reflect asset values in the asset register (accounting function); and
- to provide an accurate picture of asset performance and condition to permit financial planning of the required investments into asset maintenance and renewal.

The following actions are required to keep the information in asset register current:

Tasks at the Beginning of Each Year:

At the beginning of each year, change the current year in cell “C1” of each worksheet.

If it is readily available, you can also update the inflation for previous year in Cells “B12 through B22), in the worksheet titled “inflation adjustments. If this information is not available, you can leave the inflation as the default value, already entered in the worksheet.

Completion of these tasks will automatically update the following information with respect to all assets in the asset register:

- Asset gross replacement cost (GRC);
- Annual asset maintenance cost;
- Accumulated Depreciation; and
- Current book value.

Updating asset condition:

Each time, after asset condition assessment has been performed, update the condition of assets, using the dropdown menu button (Scale 1 to 5).

Updating the asset condition will automatically change the Asset Condition Index (ACI). When the ACI drops below acceptable levels, the cell fill color will change, indicating it is time to plan asset renewal or replacement.

Adding new assets:

When a new asset is added to the system you need to create asset records in the next vacant row. Please fill in all the cells with crème yellow fill and the greyed cells will automatically populate once you have filled in all the crème yellow cells.

Removing an asset when it is retired:

When an asset is retired from service change the asset status from “in service” to “retired”.

This change will automatically reduce the maintenance cost for the asset to zero for future years.

3.4 Improving Climate Change Resiliency of Infrastructure Assets

All infrastructure assets are impacted by climate change, but different categories of assets are impacted differently.

For example, increased precipitation levels may lead to flooding and soil erosion and as a result building foundations, seawalls, water storage tanks, concrete equipment mounting pads and power line pole foundations may be adversely impacted.

Increase in air and water temperatures lead to rapid evaporation, increase in salt spray and accelerated corrosion activity. Increase in temperature also results sea level rise and increase in frequency and severity of sea storms, resulting in increased structural loading of buildings, power lines and telecom towers. Increase in ambient temperature also impacts loading capacity of thermally constrained power equipment, such as transformers and generators.

Sea level rise is a direct threat to infrastructure assets located in low lying areas along the coast, including the ring road, the sea walls and the buildings.

All public sector entities responsible for managing infrastructure assets in Nauru, need to proactively assess the climate change impacts on infrastructure assets and where possible take appropriate action to improve the resiliency of infrastructure to withstand the climate change impacts. During planning, design and construction of new infrastructure assets, design specifications and construction standards needs to be

carefully selected so the infrastructure is able to withstand the anticipated adverse impacts of climate change.